

**ENVIRONMENTAL SERVICES  
SPB05-894P-P**

**1. PARTIES**

THIS CONTRACT, is entered into by and between the State of Montana, Department of Administration, State Procurement Bureau, (hereinafter referred to as "the State"), whose address and phone number are Room 165 Mitchell Building, 125 North Roberts, PO Box 200135, Helena MT 59620-0135, (406) 444-2575 and **Herrera Environmental Consultants, Inc.**, (hereinafter referred to as the "Contractor"), whose nine digit Federal ID Number, address and phone number are 91-1329346, 101 East Broadway, Suite 601, Missoula MT 59801, and (406) 721-4204.

**THE PARTIES AGREE AS FOLLOWS:**

**2. PURPOSE**

The purpose of this term contract is to establish a list of Environmental Service Providers in several service areas. All qualified offerors will be assembled into a multiple contractor term contract for use by state agencies and other public procurement units. The State makes no guarantee of use by any agency-authorized access to this term contract. However, through data conveyed by the Montana Department of Environmental Quality, Montana Department of Natural Resources and Conservation, and Montana Fish, Wildlife and Parks, it is anticipated that this term contract should access approximately 2.5 million dollars or more annually.

**3. EFFECTIVE DATE, DURATION, AND RENEWAL**

**3.1 Contract Term.** This contract shall take effect upon execution of all signatures, and terminate on June 30, 2007, unless terminated earlier in accordance with the terms of this contract. (Mont. Code Ann. § 18-4-313.)

**3.2 Contract Renewal.** This contract may, upon mutual agreement between the parties and according to the terms of the existing contract, be renewed in one-year intervals, or any interval that is advantageous to the State, for a period not to exceed a total of four additional years. This renewal is dependent upon legislative appropriations.

**3.3 Addition of Analytical Laboratory Contractor.** Proposals will be accepted between April 1 and May 1 of each calendar year from current firms requesting review of their qualifications to perform Analytical Laboratory Services as originally requested under RFP SPB05-894P. The state will evaluate each proposal received in the exact manner in which the original proposals for other categories were evaluated. If proposal passes the requirements as evaluated to perform Analytical Lab Services, the state will update that firms term contract to include the Analytical Lab Services category contingent on said firm being in good standing otherwise.

**4. NON-EXCLUSIVE CONTRACT**

The intent of this contract is to provide state agencies with an expedited means of procuring supplies and/or services. This contract is for the convenience of state agencies and is considered by the State Procurement Bureau to be a "Non-exclusive" use contract. Therefore, agencies may obtain this product/service from sources other than the contract holder(s) as long as they comply with Title 18, MCA, and their delegation agreement. The State Procurement Bureau does not guarantee any usage.

**5. COOPERATIVE PURCHASING**

Under Montana law, public procurement units, as defined in section 18-4-401, MCA, have the option of cooperatively purchasing with the State of Montana. Public procurement units are defined as local or state public procurement units of this or any other state, including an agency of the United States, or a tribal

procurement unit. Unless the bidder/offeror objects, in writing, to the State Procurement Bureau prior to the award of this contract, the prices, terms, and conditions of this contract will be offered to these public procurement units.

## **6. TERM CONTRACT REPORTING**

Term contract holder(s) shall furnish annual reports of term contract usage. Each report shall contain complete information on all public procurement units utilizing this term contract. Minimum information required to be included in usage reports: name of the agency or governmental entity who contacted you regarding a potential project; project title; agency contact person; if the project was not successfully negotiated, state the reason; number and title of contracts received; total dollar amounts for contracts received; the names of your company personnel involved in the project; and project status as of usage report date. The report for this term contract will be due on July 20<sup>th</sup> of each year.

Reported volumes and dollar totals may be checked by the State Procurement Bureau against State records for verification. Failure to provide timely or accurate reports is justification for cancellation of the contract and/or justification for removal from consideration for award of contracts by the State.

## **7. COST/PRICE ADJUSTMENTS**

**7.1 Cost Increase by Mutual Agreement.** After the initial term of the contract, each renewal term may be subject to a cost increase by mutual agreement. Contractor must provide written, verifiable justification for any cost adjustments they request during each renewal period. Contractor shall provide its cost adjustments in both written and electronic format.

**7.2 Differing Site Conditions.** If, during the term of this contract, circumstances or conditions are materially different than set out in the specifications, the Contractor may be entitled to an equitable adjustment in the contract price. The Contractor shall immediately cease work and notify, in writing, the State of any such conditions necessitating an adjustment as soon as they are suspected and prior to the changed conditions affecting the performance of this contract. Any adjustment shall be agreed upon in writing by both parties to the contract.

**7.3 Cost/Price Adjustment.** All requests for cost/price adjustment must be submitted between April 1st and April 30th along with written justification. Requests received after April 30th will not be considered unless written approval from the SPB Contracts Officer is given to submit at a later date. In no event will cost/price adjustments be allowed beyond May 15th. All requests that are approved will be incorporated by contract amendment and made effective July 1st of the next approved renewal period.

## **8. SERVICES AND/OR SUPPLIES**

**8.1 Service Categories.** Contractor agrees to provide to the State the following services:

**Water Quality Monitoring – Fixed Station and Probabilistic Design.** The statewide monitoring network has three components. The first component is the fixed station water quality-monitoring network. There are 38 fixed station sites located on streams throughout Montana where there are active USGS gauging stations. The USGS is currently contracted to collect all of the water chemistry samples. The State may also collect sediment samples for trace metal analyses. Remote sensing may be used to assess stream geomorphology, flood plain and watershed characteristics.

**Water Quality Monitoring - Lakes and Streams.** As part of the monitoring program, standards criteria and TMDL development, lakes will continue to be sampled collecting chemistry, physical, and habitat parameters. Stream sampling may include sediment and water chemistry, geomorphology, habitat, or sources of pollutants (e.g., pebble counts, channel cross-section, stream reach assessments, photo points, Rosgen Type II, etc GIS and remote sensing may be used to assess riparian habitats, and watershed physical characteristics.

**Water Quality Monitoring - Reference Sites.** As part of the monitoring program and standards criteria development, reference sites will continue to be identified and characterized as described above.

**TMDL Targets.** The TMDL program (within DEQ) will often need additional data in order to develop TMDL targets. Targets are quantitative water quality goals or “endpoints” that represent all the applicable narrative or numeric water quality standards. These targets, when achieved will represent full beneficial use support. This may require additional monitoring to determine reference condition when TMDL targets are based on narrative criteria or designated uses (water quality standards). Targets may be based on numeric water quality criteria, pollutant concentrations or loads, habitat or geomorphic measures, and/or biological criteria or populations. Targets are also used to determine the existing Water Quality Impairment Status (WQIS) of the streams on the 303(d) list. In most cases, the contractor will be required to write a report, which includes a recommendation and justification for one or more TMDL targets and also compare those targets to the existing conditions to determine WQIS. Communication with the State is crucial while deriving preliminary targets to ensure TMDL consistency across Montana.

**TMDL Source Assessment/Delineation.** The TMDL program (within DEQ) will often need additional data in order to link water quality impairments to their sources, or to allocate sources of pollutants. This may require data compilation, investigative monitoring and statistical analysis within a specified watershed, which can be used for source allocation, or the linkage of water quality impairments to causes and sources of impairment (e.g., sediment or land use practices). Quantitative source assessments may be conducted using field-based monitoring and/or interpretation and analysis of aerial photos, digital images, or GIS coverages depending upon impairment sources and available information. In most cases, contractors will be required to write a report that identifies what the major causes of impairment are and where the major sources of pollutants are located. DEQ will also need to have all pollution/pollutant sources quantified. The quantification of these loads will assist in both source load allocations and the total maximum daily loads. In addition, data collected during source assessments must be entered into an approved database structure or format and linkage to the National Hydrography Dataset (NHD) streams layer may be requested. The department may also request a cost/benefit analysis for implementing BMPs, which can be used for developing TMDL source allocations. Communication with the State is crucial while deriving assessing sources of pollutants to ensure TMDL consistency across Montana.

**TMDL Load Allocations.** The TMDL program (within DEQ) will often need additional data in order to develop load allocations in conjunction with the source assessment/delineation. Load allocations are the portion of a receiving water’s loading capacity that is attributed to existing or future point or non-point sources of pollution or to natural background sources. Load allocations are best estimates of the loading, which can range from reasonably accurate estimates to gross allotments. Allocation can be expressed as a percent reduction that results in a maximum allowable load or as performance-based, which demonstrates how BMPs will be applied and how they will reduce the current loads. Communication with the State is crucial while deriving preliminary load allocations to ensure TMDL consistency across Montana.

**Total Maximum Daily Loads.** The TMDL program (within DEQ) will often need additional data in order to develop Total Maximum Daily Loads (TMDLs). A TMDL is defined as the sum of the wasteload allocations to point sources, load allocations to non-point sources and natural background sources with a margin of safety considering seasonal variation. TMDLS can be expresses in terms of mass per time, toxicity, or other appropriate measures that relate to the State’s Water Quality Standards. Communication with the State is crucial while deriving preliminary TMDLs to ensure consistency across Montana.

**TMDL Effectiveness Monitoring.** Effectiveness monitoring will be required to evaluate the success of implementing a TMDL plan. Monitoring will often include the collection of some combination of chemical, physical or biological data, which can be used to determine if water quality is improving over time. Most monitoring designs and techniques will be fairly straightforward and may only require visiting a site once per year. In most cases, the contractor will be required to write an annual report, which can be used to determine if water quality is improving.

**Geographic Information Systems (GIS) Services.** The State, and in particular DEQ, will need assessments that characterize a watershed and identify and quantify all probable sources of pollutants. GIS maps will be required for every waterbody that is assessed. Thematic maps may include, but are not limited to: land ownership, land use, topography, hydrology, soils, precipitation, and/or endangered species distribution. In addition, DEQ may request that GIS applications be used to facilitate the interpretation and analysis of digital images and/or other georeferenced data.

**Water Quality Modeling.** The State, and in particular DEQ, uses contracted services in the development and/or application of watershed and water quality modeling tools and techniques in the development of TMDLs. Models may be used to assist in defining TMDL loading allocations, performing existing/potential conditions analysis, watershed scenario analysis, and/or standards attainment analysis. The types of models that may be employed include dynamic watershed loading models (i.e. SWAT, HSPF), water quality fate and transport models (i.e. QUAL2E, QUAL2K), stream temperature and/or shade models (i.e. SSTemp, HeatSource, Shadow), and multi-dimensional lake/reservoir models (i.e. CE QUAL W2). In addition, simpler modeling tools and techniques such as GIS-based Risk Assessment Modeling may be employed or developed based on project needs and resources. The DEQ may also seek assistance in the identification and/or development of simple modeling tools that may be implemented at the desktop that facilitate quick scenario applications. These tools should be able to focus on specific water quality issues such as sediment, nutrients, salinity, etc. and be tailored to the various (eco) regions across the state.

**Statistical Analysis.** The State may request that large data sets be statistically analyzed for determining trends or for making comparisons. This service area may include data compilation, organization, manipulation and analysis. These analyses may be used to validate environmental targets by comparing reference data to existing data. They may also be used to establish a relationship or linkage between indicators and targets, the estimated loads and how targets link to beneficial use support. Analyses should be appropriate for the type of data being analyzed. In many cases, the contractor will be responsible for determining and providing rationale for appropriate statistical analyses to address pre-formulated environmental hypotheses. Analyses must consider spatial and temporal variations. Analyses may range from providing simple descriptive statistics to reporting multifactor predictive analyses.

**Communication/Educational Services – Information & Education.** Communication/education contractor specializing in information and education would assist in implementing the statewide information and education program for designated environmental projects. An example would be for the non-point sources of pollution as defined in the federal Clean Water Act. Some potential activities related to the aforementioned example are: hydromodification, stormwater runoff, raising livestock, farming, logging, land disposal, construction, historic mining districts, atmospheric deposition, transportation, and habitat modification. The Information and Education services would be targeted towards specific projects develop by the State or governmental entities.

**8.2 Reuse of Documents.** When the projects dictate a design or engineered approach, the State agrees that it will not apply the Contractor's designs to any other projects.

## **9. ENGINEERING ACCESS**

All of the firms selected may need to have access to engineering services depending on the nature of the project. The contractor(s) will be expected to use their own best judgment as to whether engineering services are needed for a given project. However, traditional engineering methodologies are not the emphasis of this RFP. It is a violation of State Statute to practice engineering or land surveying without a license.

## **10. PROJECT SELECTION**

**10.1 Project Identification.** The State will be responsible for identifying projects, contacting landowners and securing necessary permission/cooperation agreements, selecting a contractor, writing grant applications and approving project payments.

**10.2 Hazardous Materials.** The State will not initiate projects where it is known that hazardous materials are present. If there is an indication of a potential of hazardous materials, then the State will do testing prior to contacting the contractor. However, there is always the possibility of unforeseen problems resulting in the stoppage of a project.

**10.3 Meetings.** The selected contractor may be required to meet with State personnel at the project site to conduct a site evaluation, discuss project issues and begin the negotiation process on project feasibility, conceptual design and costs for each project.

**10.4 Approach Expectations.** In the case of restoration activities, the agency will identify the preferred techniques. The determination made by the State may define which contractor(s) are contacted for project initiation. The State is always open to new and innovative approaches that accomplish project goals.

## **11. SELECTING A CONTRACTOR**

The State may select a term contract holder from the Environmental Services contract home page as provided under the state's website address

<http://www.discoveringmontana.com/doa/gsd/procurement/TermContracts/environservices/Default.asp>, taking into consideration such things as the contractor's area of expertise, requirements and location of the project, the contractor's availability and access to resources necessary to efficiently and effectively complete the project, demonstrated excellent past performance on State and public projects, identified subcontractors and total project cost.

General. Ordering agencies shall use the procedures in this section when ordering services priced at hourly rates as established by each Term Contract (TC). The applicable service categories are identified in each TC along with the contractor's price lists.

Request for Quotation (RFQ) procedures. The ordering agency must provide an RFQ, which includes the statement of work and limited, but specific evaluation criteria (e.g., experience and past performance), to TC contractors that offer services that will meet the agency's needs. The RFQ may be posted to the agency's state website to expedite responses.

Statement of Work (SOWs). All SOW's shall include at a minimum a detailed description of the work to be performed, location of work, period of performance, deliverable schedule, applicable performance standards and any special requirements (e.g., security clearances, travel, special knowledge).

- (1) Ordering agency may select a contractor from the appropriate service category and directly negotiate a mutually acceptable project based on a sudden and unexpected happening or unforeseen occurrence or condition, which requires immediate action. (Exigency).
- (2) Ordering agency may place orders at or below the \$5,000 threshold with any TC contractor that can meet the agency's needs. The ordering agency should attempt to distribute orders among all service category contractors.
- (3) For orders estimated to exceed \$5,000 but less than \$25,000.
  - (i) The ordering agency shall develop a statement of work.
  - (ii) The ordering agency shall provide the RFQ (including the statement of work and evaluation criteria) to at least three TC contractors that offer services that will meet the agency's needs.
  - (iii) The ordering agency shall request that contractors submit firm-fixed prices to perform the services identified in the statement of work.
- (4) For orders estimated to exceed \$25,000. In addition to meeting the requirements of (3) above, the ordering agency shall:

- (i) Provide the RFQ (including the statement of work and the evaluation criteria) to a minimum of six service category TC contractors (if category has less than 6, all contractors will be offered an RFQ) with a 50% replacement factor for each subsequent request for quote in the same service category.

Evaluation. The ordering agency shall evaluate all responses received using the evaluation criteria provided in the RFQ to each TC contractor. The ordering agency is responsible for considering the level of effort and the mix of labor proposed to perform a specific task being ordered, and for determining that the total price is reasonable. The agency will place the order with the contractor that represents the best value. After award, ordering agencies will provide timely notification to unsuccessful TC contractors. If an unsuccessful TC contractor requests information on a task order award that was based on factors other than price alone, a brief explanation of the basis for the award decision shall be provided.

Minimum documentation. The ordering agency shall document:

- (1) The TC contractors considered, noting the contractor from which the service was purchased.
- (2) A description of the service purchased.
- (3) The amount paid.
- (4) The evaluation methodology used in selecting the contractor to receive the order.
- (5) The rationale for making the selection.
- (6) Determination of price fair and reasonableness.

Agency project task orders will be utilized to finalize the project. Only written addenda will be used for adjustments of the task orders and must be signed by both parties. All task orders must contain signatures from both parties and appropriate agency legal review as directed in their procurement policy.

The State will monitor contractor selection by using the information provided in the annual TC usage reports.

Contractor's who fail to respond to three RFQ opportunities within a one-year period between July 1<sup>st</sup> and June 30<sup>th</sup> may be removed from the qualified list of contractors.

## **12. CONTRACTOR RESPONSIBILITIES**

**12.1 Supervision and Implementation.** The selected contractor for an individual project will be responsible for the supervision and implementation of the approach and will be responsible for oversight of work performed by all subcontractors. In most cases the contractor will provide and be responsible for all the necessary equipment, materials, supplies and personnel necessary for proper execution of the work. However, the State reserves the right to hire subcontractors (equipment and/or labor) if it will provide a cost savings to the State. The selected contractor will also be responsible for clean up of the sites if necessary and must have the sites inspected by the State immediately prior to completion.

**12.2 On-Site Requirements.** When a contractor is contacted by the State to discuss a project, the State and the contractor may visit the job site if deemed necessary by the Project Manager, to become familiar with conditions relating to the project and the labor requirements. The State will provide a detailed scope of work for the project and request the contractor supply the State with a response to project approach, cost, timeframe and any other information deemed necessary by the State to make a selection or complete a contract negotiation.

In the cases of Restoration or On-The-Ground Activities, the contractor shall adequately protect the work, adjacent property, and the public in all phases of the work. They shall be responsible for all damages or injury due to their action or neglect.

The contractor shall maintain access to all phases of the contract pending inspection by the State, the landowner, or their representative. All interim or final products funded by the contract will become the property of the State or Cooperative Purchaser upon payment for said products.

All work rejected as unsatisfactory shall be corrected prior to final inspection and acceptance. The contractor shall respond within seven calendar days after notice of observed defects has been given and shall proceed to immediately remedy these defects. Should the contractor fail to respond to the notice or not remedy the defects, the State may have the work corrected at the expense of the contractor.

**12.3 Clean Up (when project tasks require).** The contractor shall:

- Keep the premises free from debris and accumulation of waste;
- Clean up any oil or fuel spills;
- Keep machinery clean and free of weeds;
- Remove all construction equipment, tools and excess materials; and
- Perform finishing site preparation to limit the spread of noxious weeds before final payment by the State.

**12.4 Applicable Laws.** The contractor shall keep informed of, and shall comply with all applicable laws, ordinances, rules, regulations and orders of the City, County, State, Federal or public bodies having jurisdiction affecting any work to be done to provide the services required. The contractor shall provide all necessary safeguards for safety and protection, as set forth by the United States Department of Labor, Occupational Safety and Health Administration.

**12.5 Cooperation.** The contractor shall work closely with the States analytical consultants, (i.e. environmental laboratories and taxonomists) to develop the desired products.

**12.6 Work Acceptance.** The contractor is responsible for project oversight as needed. The State may also periodically provide personnel for administrative oversight from the initiation of the contract through project completion. All work will be inspected by the State or designated liaison prior to approval of any contract payments. All work rejected as unsatisfactory shall be corrected prior to final inspection and acceptance. Contractor shall respond within seven calendar days after notice of defects has been given by the State and proceed to immediately remedy all defects.

**12.7 Records.** The contractor will supply the State with documentation, when requested, of methods used throughout project implementation. Contractor will maintain records for themselves and all subcontractors of supplies, materials, equipment and labor hours expended.

**12.8 Communication.** Remoteness of project sites may necessitate that the contractor have some form of field communication such as a cellular phone. This communication is necessary to enable the State to respond to public concerns related to the project, accidents, inspections, or other project issues that require immediate feedback. In addition, the State or Cooperative Purchaser may require scheduled communication at agreed upon intervals. The communication schedule will be dependent upon the project circumstances and requirements of the contracting agency. In the case when a communication schedule is included in the Scope of Work, the schedule will commence when the contractor initiates the project.

**12.9 Change of Staffing.** Since qualifications of personnel were key in determining which offerors were selected to be on this TC, a written notification of any changes in key personnel must be made to the state agency, prior to entering into negotiations to perform any specific work scope. Contractor shall replace such employee(s) at its own expense with an employee of substantially equal abilities and qualifications without additional cost to the agency. If these staffing changes cause the contractor to no longer meet the qualifications stated herein, that firm will be removed from the service area of this TC. Failure to notify the state agency of staffing changes could result in the contractor being removed from the TC listing and possible suspension from bidding on other state projects.

**12.10 Collaboration.** The State encourages collaboration between contractors to increase the scope of services offered. In cases where the chosen contractor is not able to provide all services needed for the project, the State will expect the chosen contractor to contact other contractors on this list to negotiate subcontracts for these services before going elsewhere. Exceptions to this strategy will be evaluated on a case-by-case basis.

**12.11 Subcontractors, Project Budget and Invoicing.** All subcontractors to be used in any project must be approved by the authorized entity initiating the project. Project budgets will be negotiated for each individual project contract. However, all rates, terms and conditions set forth in this term contract will be applied to individual contracts. Subcontractor is defined as anyone other than the prime contractor having substantial direct involvement in a specific project.

The State reserves the right to choose the invoicing method from the following:

- Prime contractor's billing will include the subcontractors charges and payment will be made to the prime, or
- Prime and subcontractors will bill the State separately and the State will pay each directly.

### **13. CONSIDERATION/PAYMENT**

**13.1 Payment Schedule.** In consideration for the services to be provided, the State shall pay according to the negotiated agreement for each project. Hourly rates and miscellaneous charges as provided in Attachment B shall apply.

**13.2 Withholding of Payment.** The State may withhold payments to the Contractor if the Contractor has not performed in accordance with this contract. Such withholding cannot be greater than the additional costs to the State caused by the lack of performance.

### **14. CONTRACTOR WITHHOLDING**

Section 15-50-206, MCA, requires the state agency or department for whom a public works construction contract over \$5,000 is being performed, to withhold 1 percent of all payments and to transmit such monies to the Department of Revenue.

### **15. MONTANA PREVAILING WAGE REQUIREMENTS**

Unless superseded by federal law, Montana law requires that contractors and subcontractors give preference to the employment of Montana residents for any public works contract in excess of \$25,000 for construction or nonconstruction services in accordance with sections 18-2-401 through 18-2-432, MCA, and all administrative rules adopted pursuant thereto. Unless superseded by federal law, at least 50% of the workers of each contractor engaged in construction services must be performed by bona fide Montana residents. The Commissioner of the Montana Department of Labor and Industry has established the resident requirements in accordance with sections 18-2-403 and 18-2-409, MCA. Any and all questions concerning prevailing wage and Montana resident issues should be directed to the Montana Department of Labor and Industry.

In addition, unless superseded by federal law, all employees working on a public works contract shall be paid prevailing wage rates in accordance with sections 18-2-401 through 18-2-432, MCA, and all administrative rules adopted pursuant thereto. Montana law requires that all public works contracts, as defined in section 18-2-401, MCA, in which the total cost of the contract is in excess of \$25,000, contain a provision stating for each job classification the standard prevailing wage rate, including fringe benefits, travel, per diem, and zone pay that the contractors, subcontractors, and employers shall pay during the public works contract.

Furthermore, section 18-2-406, MCA, requires that all contractors, subcontractors, and employers who are performing work or providing services under a public works contract post in a prominent and accessible site on the project staging area or work area, no later than the first day of work and continuing for the entire duration of the contract, a legible statement of all wages and fringe benefits to be paid to the employees in compliance with section 18-2-423, MCA. Section 18-2-423, MCA, requires that employees receiving an hourly wage must be paid on a weekly basis.

Each contractor, subcontractor, and employer must maintain payroll records in a manner readily capable of being certified for submission under section 18-2-423, MCA, for not less than three years after the contractor's, subcontractor's, or employer's completion of work on the public works contract.



The nature of the work performed or services provided under this contract meets the statutory definition of a "public works contract" under section 18-2-401(11)(a), MCA, and falls under the category of Heavy Construction and Nonconstruction services. The booklets containing Montana's 2003 Rates for Heavy Construction and Nonconstruction Services are attached.

The most current Montana Prevailing Wage Booklet will automatically be incorporated at time of renewal. It is the contractor's responsibility to ensure they are using the most current prevailing wages during performance of its covered work.

## **16. ACCESS AND RETENTION OF RECORDS**

**16.1 Access to Records.** The Contractor agrees to provide the State, Legislative Auditor or their authorized agents access to any records necessary to determine contract compliance. (Mont. Code Ann. § 18-1-118.)

**16.2 Retention Period.** The Contractor agrees to create and retain records supporting the environmental services for a period of three years after either the completion date of this contract or the conclusion of any claim, litigation or exception relating to this contract taken by the State of Montana or a third party.

## **17. ASSIGNMENT, TRANSFER AND SUBCONTRACTING**

The Contractor shall not assign, transfer or subcontract any portion of this contract without the express written consent of the State. (Mont. Code Ann. § 18-4-141.) The Contractor shall be responsible to the State for the acts and omissions of all subcontractors or agents and of persons directly or indirectly employed by such subcontractors, and for the acts and omissions of persons employed directly by the Contractor. No contractual relationships exist between any subcontractor and the State.

## **18. HOLD HARMLESS/INDEMNIFICATION**

The Contractor agrees to protect, defend, and save the State, its elected and appointed officials, agents, and employees, while acting within the scope of their duties as such, harmless from and against all claims, demands, causes of action of any kind or character, including the cost of defense thereof, arising in favor of the Contractor's employees or third parties on account of bodily or personal injuries, death, or damage to property arising out of services performed or omissions of services or in any way resulting from the acts or omissions of the Contractor and/or its agents, employees, representatives, assigns, subcontractors, except the sole negligence of the State, under this agreement.

## **19. REQUIRED INSURANCE**

**19.1 General Requirements.** The Contractor shall maintain for the duration of the contract, at its cost and expense, insurance against claims for injuries to persons or damages to property, including contractual liability, which may arise from or in connection with the performance of the work by the Contractor, agents, employees, representatives, assigns, or subcontractors. This insurance shall cover such claims as may be caused by any negligent act or omission.

**19.2 Primary Insurance.** The Contractor's insurance coverage shall be primary insurance as respect to the State, its officers, officials, employees, and volunteers and shall apply separately to each project or location. Any insurance or self-insurance maintained by the State, its officers, officials, employees or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.

**19.3 Specific Requirements for Commercial General Liability.** The Contractor shall purchase and maintain occurrence coverage with combined single limits for bodily injury, personal injury, and property damage of \$1,000,000 per occurrence and \$2,000,000 aggregate per year to cover such claims as may be

caused by any act, omission, or negligence of the Contractor or its officers, agents, representatives, assigns or subcontractors.

**19.4 Additional Insured Status.** The State, its officers, officials, employees, and volunteers are to be covered and listed as additional insureds; for liability arising out of activities performed by or on behalf of the Contractor, including the insured's general supervision of the Contractor; products and completed operations; premises owned, leased, occupied, or used.

**19.5 Specific Requirements for Automobile Liability.** The Contractor shall purchase and maintain coverage with split limits of \$500,000 per person (personal injury), \$1,000,000 per accident occurrence (personal injury), and \$100,000 per accident occurrence (property damage), OR combined single limits of \$1,000,000 per occurrence to cover such claims as may be caused by any act, omission, or negligence of the contractor or its officers, agents, representatives, assigns or subcontractors.

**19.6 Additional Insured Status.** The State, its officers, officials, employees, and volunteers are to be covered and listed as additional insureds for automobiles leased, hired, or borrowed by the Contractor.

**19.7 Specific Requirements for Professional Liability.** The Contractor shall purchase and maintain occurrence coverage with combined single limits for each wrongful act of \$1,000,000 per occurrence and \$2,000,000 aggregate per year to cover such claims as may be caused by any act, omission, negligence of the Contractor or its officers, agents, representatives, assigns or subcontractors. Note: if "occurrence" coverage is unavailable or cost prohibitive, the Contractor may provide "claims made" coverage provided the following conditions are met: (1) the commencement date of the contract must not fall outside the effective date of insurance coverage and it will be the retroactive date for insurance coverage in future years; and (2) the claims made policy must have a three year tail for claims that are made (filed) after the cancellation or expiration date of the policy.

**19.8 Deductibles and Self-Insured Retentions.** Any deductible or self-insured retention must be declared to and approved by the state agency. At the request of the agency either: (1) the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the State, its officers, officials, employees, or volunteers; or (2) at the expense of the Contractor, the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claims administration, and defense expenses.

**19.9 Certificate of Insurance/Endorsements.** A certificate of insurance from an insurer with a Best's rating of no less than A- indicating compliance with the required coverages, has been received by the State Procurement Bureau, PO Box 200135, Helena MT 59620-0135. The Contractor must notify the State immediately, of any material change in insurance coverage, such as changes in limits, coverages, change in status of policy, etc. The State reserves the right to require complete copies of insurance policies at all times.

## **20. COMPLIANCE WITH THE WORKERS' COMPENSATION ACT**

Contractors are required to comply with the provisions of the Montana Workers' Compensation Act while performing work for the State of Montana in accordance with sections 39-71-120, 39-71-401, and 39-71-405, MCA. Proof of compliance must be in the form of workers' compensation insurance, an independent contractor's exemption, or documentation of corporate officer status. Neither the contractor nor its employees are employees of the State. This insurance/exemption must be valid for the entire term of the contract. A renewal document must be sent to the State Procurement Bureau, PO Box 200135, Helena MT 59620-0135, upon expiration.

## **21. COMPLIANCE WITH LAWS**

The Contractor must, in performance of work under this contract, fully comply with all applicable federal, state, or local laws, rules and regulations, including the Montana Human Rights Act, the Civil Rights Act of 1964, the Age Discrimination Act of 1975, the Americans with Disabilities Act of 1990, and Section 504 of the Rehabilitation Act of 1973. Any subletting or subcontracting by the Contractor subjects subcontractors to the

same provision. In accordance with section 49-3-207, MCA, the Contractor agrees that the hiring of persons to perform the contract will be made on the basis of merit and qualifications and there will be no discrimination based upon race, color, religion, creed, political ideas, sex, age, marital status, physical or mental disability, or national origin by the persons performing the contract.

## **22. INTELLECTUAL PROPERTY**

All patent and other legal rights in or to inventions created in whole or in part under this contract must be available to the State for royalty-free and nonexclusive licensing. Both parties shall have a royalty-free, nonexclusive, and irrevocable right to reproduce, publish or otherwise use and authorize others to use, copyrightable property created under this contract.

## **23. PATENT AND COPYRIGHT PROTECTION**

**23.1 Third Party Claim.** In the event of any claim by any third party against the State that the products furnished under this contract infringe upon or violate any patent or copyright, the State shall promptly notify Contractor. Contractor shall defend such claim, in the State's name or its own name, as appropriate, but at Contractor's expense. Contractor will indemnify the State against all costs, damages and attorney's fees that accrue as a result of such claim. If the State reasonably concludes that its interests are not being properly protected, or if principles of governmental or public law are involved, it may enter any action.

**23.2 Product Subject of Claim.** If any product furnished is likely to or does become the subject of a claim of infringement of a patent or copyright, then Contractor may, at its option, procure for the State the right to continue using the alleged infringing product, or modify the product so that it becomes non-infringing. If none of the above options can be accomplished, or if the use of such product by the State shall be prevented by injunction, the State will determine if the Contract has been breached.

## **24. CONTRACT TERMINATION**

**24.1 Termination for Cause.** The State may, by written notice to the Contractor, terminate this contract in whole or in part at any time the Contractor fails to perform this contract.

**24.2 Reduction of Funding.** The State, at its sole discretion, may terminate or reduce the scope of this contract if available funding is reduced for any reason. (See Mont. Code Ann. § 18-4-313(3).)

## **25. STATE PERSONNEL**

**25.1 State Contract Manager.** The State Contract Manager identified below is the State's single point of contact and will perform all contract management pursuant to section 2-17-512, MCA, on behalf of the State. Written notices, requests, complaints or any other issues regarding the contract should be directed to the State Contract Manager.

The State Contract Manager for this contract is:

Robert Oliver, Contracts Officer  
Room 165 Mitchell Building  
125 North Roberts  
PO Box 200135  
Helena MT 59620-0135  
Telephone #: (406) 444-0110  
Fax #: (406) 444-2529  
E-mail: [roliver@mt.gov](mailto:roliver@mt.gov)

**25.2 State Project Manager.** Each using State agency or Cooperative Purchaser will identify a Project Manager in the project task order. The Project Manager will manage the day-to-day project activities on behalf of the State/Cooperative Purchaser.

## **26. CONTRACTOR PERSONNEL**

**26.1 Change Of Staffing.** Since qualifications of personnel was key in determining which offerors were selected to be on this term contract list, a written notification to the State Procurement Bureau of any changes of key personnel must be made within two weeks of the change. These change notifications will be completed upon the departure or hiring of key personnel who are professional employees critical to awarded service areas. If these staffing changes cause the firm to no longer meet the qualifications stated herein, that firm will be removed from the service area of this term contract. Failure to notify the State Procurement Bureau of staffing changes could result in the contractor being removed from the term contract listing and possible suspension from bidding on other State projects.

**26.2 Contractor Contract Manager.** The Contractor Contract Manager identified below will be the single point of contact to the State Contract Manager and will assume responsibility for the coordination of all contract issues under this contract. The Contractor Contract Manager will meet with the State Contract Manager and/or others necessary to resolve any conflicts, disagreements, or other contract issues.

The Contractor Contract Manager for this contract is:

Len Ballek  
101 E Broadway Suite 610  
Missoula MT 59802-4510  
Telephone #: (406) 721-4204  
Fax #: (406) 721-4232  
E-mail: [lballek@herrerainc.com](mailto:lballek@herrerainc.com)

**26.3 Contractor Project Manager.** The Contractor Project Manager identified below will manage the day-to-day project activities on behalf of the Contractor:

The Contractor Project Manager for this contract is:

Len Ballek  
101 E Broadway Suite 610  
Missoula MT 59802-4510  
Telephone #: (406) 721-4204  
Fax #: (406) 721-4232  
E-mail: [lballek@herrerainc.com](mailto:lballek@herrerainc.com)

## **27. MEETINGS**

The Contractor is required to meet with the State's personnel, or designated representatives, to resolve technical or contractual problems that may occur during the term of the contract or to discuss the progress made by Contractor and the State in the performance of their respective obligations, at no additional cost to the State. Meetings will occur as problems arise and will be coordinated by the State. The Contractor will be given a minimum of three full working days notice of meeting date, time, and location. Face-to-face meetings are desired. However, at the Contractor's option and expense, a conference call meeting may be substituted. Consistent failure to participate in problem resolution meetings two consecutive missed or rescheduled meetings, or to make a good faith effort to resolve problems, may result in termination of the contract.

## **28. CONTRACTOR PERFORMANCE ASSESSMENTS**

The State may do assessments of the Contractor's performance. This contract may be terminated for one or more poor performance assessments. Contractors will have the opportunity to respond to poor performance assessments. The State will make any final decision to terminate this contract based on the assessment and any related information, the Contractor's response and the severity of any negative performance assessment. The Contractor will be notified with a justification of contract termination. Performance assessments may be considered in future solicitations.

## **29. TRANSITION ASSISTANCE**

If this contract is not renewed at the end of this term, or is terminated prior to the completion of a project, or if the work on a project is terminated, for any reason, the Contractor must provide for a reasonable period of time after the expiration or termination of this project or contract, all reasonable transition assistance requested by the State, to allow for the expired or terminated portion of the services to continue without interruption or adverse effect, and to facilitate the orderly transfer of such services to the State or its designees. Such transition assistance will be deemed by the parties to be governed by the terms and conditions of this contract, except for those terms or conditions that do not reasonably apply to such transition assistance. The State shall pay the Contractor for any resources utilized in performing such transition assistance at the most current rates provided by the contract. If there are no established contract rates, then the rate shall be mutually agreed upon. If the State terminates a project or this contract for cause, then the State will be entitled to offset the cost of paying the Contractor for the additional resources the Contractor utilized in providing transition assistance with any damages the State may have otherwise accrued as a result of said termination.

## **30. CHOICE OF LAW AND VENUE**

This contract is governed by the laws of Montana. The parties agree that any litigation concerning this bid, proposal or subsequent contract must be brought in the First Judicial District in and for the County of Lewis and Clark, State of Montana and each party shall pay its own costs and attorney fees. (See Mont. Code Ann. § 18-1-401.)

## **31. SCOPE, AMENDMENT AND INTERPRETATION**

**31.1 Contract.** This contract consists of 13 numbered pages, any Attachments as required, RFP # SPB05-894P, as amended and the Contractor's RFP response as amended. In the case of dispute or ambiguity about the minimum levels of performance by the Contractor the order of precedence of document interpretation is in the same order.

**31.2 Entire Agreement.** These documents contain the entire agreement of the parties. Any enlargement, alteration or modification requires a written amendment signed by both parties.

**32. EXECUTION**

The parties through their authorized agents have executed this contract on the dates set out below.

**DEPARTMENT OF ADMINISTRATION  
STATE PROCUREMENT BUREAU  
PO BOX 200135  
HELENA MT 59620-0135**

**HERRERA ENVIRONMENTAL CONSULTANTS, INC.  
101 EAST BROADWAY, SUITE 601  
MISSOULA MT 59801  
FEDERAL ID # 91-1329346**

BY: \_\_\_\_\_  
Penny Moon, Contracts Officer

BY: \_\_\_\_\_  
(Name/Title)

BY: \_\_\_\_\_  
(Signature)

BY: \_\_\_\_\_  
(Signature)

DATE: \_\_\_\_\_

DATE: \_\_\_\_\_

## **ATTACHMENT A CONTRACTOR'S RESPONSE**

### Section 4: Offeror Qualifications

#### 4.0 State's Right to Investigate and Reject

Herrera understands and will comply.

#### 4.1 Offeror Informational Requirements – All Service Categories

Herrera understands and will comply.

#### 4.2 Offeror Qualification Requirements – Specific Service Categories

Herrera understands and will comply.

##### 4.1.1 References

Herrera Environmental Consultants has a history of successfully providing services to clients throughout the western United States. As an environmental science and engineering firm, Herrera combines the expertise of our scientists, engineers, and planners to provide an interdisciplinary approach to each project. This specialized approach provides our clients with a greater understanding of each of the key components in every project. In addition, attention to our client's needs and a commitment to satisfying those needs efficiently have been the key to Herrera's success in managing its past and present projects. The following projects illustrate our experience providing water quality monitoring services for lakes and streams to a variety of clients, as well as provide a client contact for each project that will attest to our capabilities.

#### **Camano Island Watershed Management Plan, Camano Island, Washington**

*Client: Island County Public Works Department*

*Contact: Jeff Hall, Watershed Project Manager, Island County Public Works, (360) 387-3442 x240,*

*Performance Period: 2002*

*Contract Amount: \$2,000*

Under an on-call contract with Island County, Herrera was responsible for designing a monitoring program for a water quality assessment of streams on Camano Island. Herrera prepared a quality assurance project plan (QAPP) for collecting baseline data to assess the current status of water quality on Camano Island, identify nonpoint sources of pollution, and develop pollution prevention strategies for the watershed management plan. The QAPP was prepared in accordance with the Centennial Clean Water Fund grant agreement and guidelines published by the Washington Department of Ecology. This plan included a summary of existing information in addition to methods for sample collection and analysis, quality control objectives and procedures, and data assessment and reporting procedures. Herrera is currently implementing the QAPP which includes collecting water samples during 10 storm events over a period of two years for analysis of a comprehensive set of parameters including fecal coliform bacteria, and includes the collection of macroinvertebrate samples from seven major streams on the island. Upon completion of the first year of monitoring, Herrera will prepare a water quality assessment using data collected by Herrera, Island County, and others. Findings from this initial assessment will be used to evaluate whether monitoring procedures should be modified to better meet the study objectives. Upon completion of the second year of monitoring, a final water quality assessment will be prepared that evaluates the entire set of collected data.

#### **Des Moines Water Quality Monitoring Program, Des Moines, King County, Washington**

*Client: City of Des Moines, Surface Water Management Utility*

*Contact: Mr. Loren Reinhold, Assistant City Engineer, City of Des Moines Public Works (206) 870-6524*

*Performance Period: 1994 – 2000*

*Contract Amount: \$260,000*

Herrera developed the City of Des Moines Water Quality Monitoring Program to evaluate benefits of the city's stormwater management plan over a 5-year period in three streams located in the City of Des Moines. Herrera prepared the water quality monitoring and quality assurance project plan that was

approved by the Department of Ecology. Herrera scientists monitored water quality during five storm events and three base flow periods each year. Herrera also measured stream flow, developed discharge rating curves, assessed fisheries habitat and benthic invertebrate populations, conducted nonpoint source pollution tracking, validated water quality data, and presented results in annual reports. For the final project report, Herrera evaluated spatial and temporal trends in water quality and benthic invertebrate populations using state-of-the-art statistical procedures.

In addition to water quality monitoring, Herrera also conducted post-restoration stream habitat and vegetation monitoring on the lowermost 400-foot reach of Des Moines Creek. The City of Des Moines had completed restoration of this section of the creek in 1991, and was required by the U.S. Army Corps of Engineers to conduct this monitoring in compliance with the mitigation plan. Herrera biologists reviewed the planting plan identifying the locations of plantings along the reach, and used it to evaluate the existing vegetation conditions. Vegetation characteristics were recorded by counting trees and estimating the percent coverage of shrubs and herbs within each planting area. Survival of plantings was evaluated by comparing the existing coverage of planted species to what was actually planted. The presence of invasive species was also recorded. Stream channel characteristics were assessed by monitoring substrate conditions, vegetative cover, fish habitat, streambank stability, and other features. Recommendations were made to improve conditions by controlling invasive species, planting native vegetation, and properly maintaining the riparian corridor.

#### Green-Duwamish Watershed Water Quality Assessment, Seattle, Washington

*Client: King County DNRP / WLRD*

*Contact: Douglas Henderson, Project Manager, (206) 263-6317*

*Performance Period: 2003 – Present*

*Contract Amount: \$400,000*

Herrera is currently providing water quality, hydrology, land use, and biological data evaluation services to King County for the Green-Duwamish Watershed Water Quality Assessment. These services include preparation of two water quality data reports, a water quality pollutant loadings report, two benthic macroinvertebrate reports, and a microbial source tracking report. For the first water quality data report, Herrera has compiled and analyzed an extensive set of water quality and hydrologic monitoring data collected in 2001 and 2002 for 18 monitoring sites in the 264 square mile Green-Duwamish watershed (WRIA 9). Herrera will compile and evaluate data collected in 2003 for the second water quality data report. Hydrologic data analysis conducted for these water quality data reports includes the development of algorithms for separating base and storm flow portions of the hydrographs over the three year study period. The water quality loadings report will include calculations of loadings for each water quality parameter using discharge data for the monitored basins, estimates of loading factors for land use categories using the data collected, and detailed statistical analyses for evaluating potential relationships between pollutant concentrations and various environmental conditions. Herrera is also coordinating the preparation of two benthic macroinvertebrate reports that will evaluate data collected in 2002 and 2003 for approximately 200 sites in the Green-Duwamish watershed and the Cedar-Sammamish-Washington watershed (WRIA 8). These reports will assess habitat conditions in these watersheds based on the Benthic Index of Biotic Integrity (B-IBI) scores that are calculated from the benthic invertebrate data, and will evaluate relationships between the B-IBI scores and various water quality, hydrology, land use, and fish habitat conditions. Using information from the analyses described above, Herrera will make recommendations to King County for a long-term monitoring program in the Green-Duwamish watershed. Finally, Herrera will prepare a microbial source tracking report that evaluates genetic fingerprinting data collected for *E. coli* bacteria that have been isolated from water samples collected within the watershed.

#### Lake Youngs Reservoir Limnological Studies, King County, Washington

*Client: Seattle Public Utilities*

*Contact: Moya Joubert, (206) 233-2057*

*Performance Period: 1990 – 2001*

*Contract Amount: \$124,000*



Herrera prepared comprehensive monitoring plans and evaluated seven years of limnological data for Lake Youngs Reservoir, which provides drinking water to over one million people in the Seattle metropolitan area. Herrera assessed the aquatic macrophyte community and prepared three aquatic plant maps based on underwater sonar surveys of plant coverage, visual estimates of plant density, identification of plant species, and SCUBA sampling of plant biomass and nutrient content. Options for controlling a recent invasion of Eurasian watermilfoil were evaluated and an eradication plan was successfully implemented, which allowed for continuous use of the public water supply using non-chemical techniques. Herrera conducted a detailed study of taste and odor problems associated with attached algae and bacteria growth in Lake Youngs and Seattle's distribution reservoirs. A taste and odor management plan was prepared based on results of in-lake treatments of attached algae growth, SCUBA sampling and video surveys of attached algae populations, laboratory cultures of algae species for odorous metabolite production, and flavor testing of lake and river source waters.

#### Green Lake Water Quality Improvements Alum Treatment Engineering and Monitoring Services, Seattle, Washington

*Client: Seattle Parks and Recreation*

*Contact: Kevin Stoops, PM, 206.684.7053*

*Performance Period: 2003 – Present*

*Contract Amount: \$128,131*

Herrera provided planning, engineering, and monitoring services to Seattle Parks and Recreation for the treatment of Green Lake with aluminum sulfate (alum) during the spring of 2004 to reduce the internal loading of phosphorus and resulting toxic algae blooms. Initially, Herrera conducted a comprehensive study to determine the optimum approach to treating Green Lake with alum. For this study, historical water quality and fisheries data were summarized, a literature search of alum treatments was performed, the dose of alum and sodium aluminate (buffer) were calculated using sediment phosphorus data, alum jar tests were conducted to assess water quality impacts of varied dose amounts, permit requirements were outlined, and treatment specifications and costs were developed.

Herrera prepared an integrated phosphorus management plan (IPMP) to obtain coverage under the Washington Department of Ecology's aquatic nuisance plant and algae control National Pollutant Discharge Elimination System (NPDES) general permit. For this plan, a problem statement was developed, lake and watershed characteristics were described, past management efforts and goals were summarized, alternative phosphorus management techniques were evaluated, and the alum treatment implementation strategy was outlined. Herrera also prepared a public involvement plan, SEPA checklist, and water quality monitoring plan for the IPMP. Ecology promptly approved the IPMP and issued the NPDES permit following the 30-day public review period.

Herrera provided engineering and monitoring services for the 2004 alum treatment of Green Lake. Herrera provided review of the treatment specifications, drawings, and engineering cost estimate prepared by the consultant team, and participated in contractor bid review and selection. Herrera provided technical oversight of engineering services and conducted all water quality monitoring during the 14-day alum treatment. Prior to treatment, Herrera performed water quality monitoring of the lake to establish baseline conditions, and conducted a large-scale jar test using the delivered chemicals and prescribed dose. During the treatment, quantities and disbursement of the alum and sodium aluminate were documented on a daily basis, and water quality data were collected on an hourly basis to comply with permit conditions for the protection of fish from pH stress and aluminum toxicity. Currently, Herrera is conducting the first year of post-treatment water quality monitoring. Herrera will prepare a project report that documents alum treatment procedures and observations, and compares the collected water quality data to the project goals and permit conditions.

#### 4.1.2 Company Profile and Experience

Herrera Environmental Consultants, Inc. (Herrera) has been providing a diverse range of civil / environmental engineering, environmental science, and planning services to clients throughout the western United States, since 1980. Herrera offers expertise in most aspects of environmental science

and engineering services, including environmental and regulatory compliance, permitting, and restoration and mitigation, with additional expertise in public policy development, environmental training, and technical publications, as well as project planning, design, and storm water and drainage design services.

Herrera's Montana branch office, and main office for Montana-related services, is located in Missoula. During the last four years, Herrera has established this Montana office that staffed by long-time Montana residents, who have gained professional experience in Montana and surrounding areas. In addition to our Montana staff, a high level of focused expertise in environmental science, engineering, permitting, planning and public involvement is available from Herrera's Seattle and Portland offices.

Herrera has developed management strategies for water quality improvement and protection of aquatic habitats for over 20 years. Herrera has conducted water quality and sediment investigations for numerous lakes, streams, rivers, and wetlands located throughout the western states. Our expertise encompasses successful planning, implementation, and design strategies that have been applied to projects throughout the west for clients that include federal, state, and local agencies, as well as private sector clients. Our staff members are thoroughly familiar with the surface water and drinking water regulations and standards established by U.S. EPA and various state agencies. Our senior limnologist, Rob Zisette is a regional expert in lake characterization, diagnosis, management, and restoration analysis. We have conducted comprehensive water quality monitoring and habitat surveys of lakes and streams in urban, agricultural, and forested watersheds for the protection of recreation, fisheries, and water supply uses. Herrera staff have used various sampling techniques that include ultra-clean technique for low levels of pollutants, continuous long-term monitoring of multiple field parameters, automatic samplers for collection of stormwater samples, and rapid bioassessment protocols for assessing periphyton and macroinvertebrate communities. Herrera staff are proficient with traditional parametric statistics and more specialized nonparametric techniques that are often required for analyzing water quality data. Our staff are also well versed in the use of multivariate clustering and ordination algorithms that can be used to detect and explore trends in water quality and/or biological data. We have applied these state-of-the-art techniques for assessing impacts of wastewater discharges, stormwater runoff, and other pollutant sources to receiving waters from a wide range of land use activities. The following Herrera individuals are qualified to provide water quality services to the State of Montana. Resumes detailing the qualifications of each individual follow these brief summaries.

#### **Kathleen Adams, Senior Natural Resource Scientist / Wildlife Biologist – Project Manager**

Ms. Adams, a senior natural resource scientist and head of Herrera's Missoula, Montana office, has experience in wildlife, wetland, and plant ecology. Her consulting expertise includes identifying and describing sensitive areas and upland vegetative communities, and evaluating wildlife and fisheries habitat and use for NEPA/SEPA compliance, Endangered Species Act compliance, and environmental permitting. Ms. Adams has conducted and prepared biological assessments for construction projects for state transportation agencies in Washington and Montana, and for the Federal Highway Administration. Ms. Adams has also facilitated agreement between regulatory and proponent agencies on wetland mitigation for high impact projects. She has a wide range of field experience including upland and wetland plant identification and sampling, rare plant surveys, songbird point counts, waterfowl surveys, small mammal and herpetological surveys, wetland delineations, and stream surveys.

#### **Rob Zisette, Aquatic Science Director – Technical Lead**

Mr. Zisette, Herrera's aquatic science director, has 23 years of professional experience specializing in surface water management, including water quality assessments, stormwater management plans, aquatic plant management studies, lake restoration projects, and environmental impact statements. He has developed and implemented monitoring and quality assurance project plans for various freshwater and marine water and sediment quality investigations. Mr. Zisette has evaluated nonpoint source pollution and the effects of best management practices (BMPs) in streams and urban drainage basins. He has assessed benthic invertebrate populations, fish habitat, and riparian conditions in streams. Mr.

Zisette has mapped aquatic plants, evaluated aquatic plant management techniques, assessed plankton communities, identified nutrient sources, and characterized taste and odor sources in lakes and drinking water reservoirs. Additional experience includes water quality impact analysis for solid and hazardous waste management projects, dredge disposal analysis for marine sediment management projects, laboratory analysis of water samples for various chemical and biological parameters, and validation of field and laboratory data.

#### John Lenth, Senior Environmental Scientist

Mr. Lenth is a senior environmental scientist with 10 years of experience in aquatic ecology, water quality, hydrology, and watershed management. He has a broad familiarity with field and laboratory procedures for conducting water quality studies in both lakes and streams. He has implemented several long-term water quality monitoring projects designed to assess the effectiveness of best management practices in controlling nonpoint source pollution from urban and agricultural land use. Mr. Lenth's background includes experience performing biological assessments of water quality using aquatic macroinvertebrates. He has used a wide variety of sampling techniques for aquatic macroinvertebrates and is skilled in freshwater invertebrate taxonomy. Mr. Lenth also has extensive experience in data management and statistical analysis. His background in statistics includes knowledge of both univariate and multivariate techniques for examining patterns in biological and water quality data. Mr. Lenth is highly proficient at installing and monitoring field water quality instruments, having installed and programmed a wide variety of devices for the remote collection of hydrologic and water quality data. His skills also include evaluating fish habitat quality in streams, mapping of habitat features with differential GPS, implementing quality assurance and quality control protocols, and analyzing water samples for various chemical and biological parameters. He has also been active in educating community groups on issues related to water quality, watershed management, and benthic ecology.

#### Jennifer B. Goldsmith, Environmental Scientist

Ms. Goldsmith has 12 years of experience conducting natural resource assessments throughout the Pacific Northwest. Her professional expertise includes ground water and surface water quality sampling, development of water quality monitoring programs, analysis of water quality data and impact prediction, forestry, and storm water modeling. She has completed Washington State Watershed Analysis Level 1 and 2 Riparian Function Assessments of canopy closure and stream temperature for numerous watersheds. Ms. Goldsmith has extensive experience preparing water quality analysis documentation for a variety of environmental impact statements, environmental assessments, and permit applications. She is familiar with Timber/Fish/Wildlife (T/F/W) guidelines and has implemented these guidelines to assess fisheries conditions and identify resource sensitivities. In addition, Ms. Goldsmith has prepared water resource, geology and soils existing conditions and impacts from various timber management options for NEPA environmental assessments. Ms. Goldsmith was a member of the team of scientists and biologists that conducted the first habitat conservation plan (HCP) in the state of Washington.

#### Dan Bennett, Staff Environmental Scientist

Mr. Bennett is an environmental scientist with 10 years of experience in a wide variety of disciplines including water quality, aquatic ecology, soil science, erosion control, and forest and watershed management. He is familiar with a wide array of field and laboratory procedures for conducting water quality monitoring and investigations of stream and soil quality, and assessing forests for habitat and timber resources. Mr. Bennett has implemented several water quality monitoring projects designed to assess the effectiveness of best management practices in controlling runoff from construction projects and from the use of soil amendments. He has conducted studies of biotic integrity of streams using indices of benthic-macroinvertebrate health. Mr. Bennett is versed in surveying and map-making techniques, and has designed and implemented geographic information system (GIS) projects.

#### Michael C. Cawrse, Environmental Scientist

Mr. Cawrse is an environmental scientist with over 5 years of experience in water quality, aquatic ecology, and wetland delineation. He is familiar with field and laboratory procedures for conducting

water quality studies of streams and lakes. He has implemented several long term monitoring studies designed to assess land use impacts on water quality and riparian habitat. Mr. Cawrse has additional experience with data management and statistical analysis. Other skills include wetland delineation, aquatic and riparian plant identification, aquatic macroinvertebrate identification, and the analysis of water samples for various chemical and biological parameters. He also has experience with toxicity testing of fresh and salt water. Mr. Cawrse has also administered several lake management and marine resource citizen advisory committees

#### Alex Svendsen, Staff Environmental Scientist

Alex Svendsen is an environmental scientist with experience in water quality, environmental restoration, and remediation. His comprehensive water quality monitoring experience includes collecting water samples, analyzing turbidity, and monitoring sediment disposal for construction projects. He has implemented and analyzed best management practices and erosion control measures for numerous construction projects. Mr. Svendsen has a broad knowledge of a variety of field and laboratory procedures used for monitoring and investigating streams, wetlands, lakes, and soils. He has installed, programmed, and maintained automated equipment for monitoring surface and groundwater hydrology and water quality. Mr. Svendsen is familiar with the procedures for measuring pH, conductivity, turbidity, heavy metals, dissolved oxygen, and bacteria in water samples.

#### Mark Ewbank, P.E., Principal Engineer

Mark Ewbank, Principal Engineer and Herrera's Director of Surface Water Engineering, has 17 years of experience in water quality, water pollution control, stormwater management, stream restoration, and related hydrologic and hydraulic analyses. Mr. Ewbank has conducted numerous assessments of hydrologic conditions in natural and developed environments and is thoroughly familiar with the development of stormwater treatment and detention system designs, as well as applications of source control best management practices for the protection of surface and ground water. He has conducted analyses of the effects of various pollutants on streams, lakes, wetlands, and estuaries, and analyzed alternative strategies for effectiveness in controlling surface water pollution. He has developed estimates of potential soil erosion from construction projects and prepared erosion and sediment control plans and designs. Mr. Ewbank has contributed to the design of several stream restoration projects, and managed Herrera's multi-disciplinary design teams on some of those projects. Mr. Ewbank has experience in developing water quality monitoring programs to assess existing conditions and in designing stormwater control facilities for residential, commercial, and industrial land uses. In addition, Mr. Ewbank has experience in developing supporting information for NPDES permit applications and compliance documents and all components of Stormwater Pollution Prevention Plans (SWPPP). Mr. Ewbank has also determined impacts of forest harvesting practices on runoff processes and related impacts on streams and instream habitat. Mr. Ewbank has the ability to direct multidisciplinary work efforts involving diverse tasks and budgets on a variety of environmental engineering projects.

#### 4.1.3 Method of Providing Services and Quality Assurance

Herrera uses a two-tiered product review system to ensure high quality and accuracy of all work. Under the first tier, the project manager will provide initial review, and has major responsibility for developing technical and design reports that are accurate and thorough (including performance of fieldwork). The principal-in-charge, will provide second-tier review and holds ultimate responsibility for the technical integrity of work performed by our staff. This final review and approval of all work products is the last step in a series of checks and balances that ensures refinement and review of work as it progresses. No draft documents will be issued to the State until Herrera's review process has occurred. These well-established review procedures enhance Herrera's ability to meet the State's needs throughout the duration of this contract and ensure that all work products are of the highest quality.

Herrera has recent experience that demonstrates our capabilities and methods of providing water quality services. A specific example that conveys this experience in water quality services is the Camano Island Watershed Management Plan. The project is scheduled to be completed on time and

within budget. This example project illustrates the methodology used by Herrera staff in gathering and analyzing water quality data for streams.

Under an on-call contract with Island County, Herrera was responsible for designing a monitoring program for a water quality assessment of streams on Camano Island. Herrera prepared a quality assurance project plan (QAPP) for collecting baseline data to assess the current status of water quality on Camano Island, identifying nonpoint sources of pollution, and developing pollution prevention strategies for the watershed management plan. The QAPP was prepared in accordance with the Centennial Clean Water Fund grant agreement and guidelines published by the Washington Department of Ecology. This plan included a summary of existing information in addition to methods for sample collection and analysis, quality control objectives and procedures, and data assessment and reporting procedures. Herrera is currently implementing the QAPP which includes collecting water samples during 10 storm events over a period of two years for analysis of a comprehensive set of parameters including fecal coliform bacteria, and includes the collection of macroinvertebrate samples from seven major streams on the island. Upon completion of the first year of monitoring, Herrera will prepare a water quality assessment using data collected by Herrera, Island County, and others. Findings from this initial assessment will be used to evaluate whether monitoring procedures should be modified to better meet the study objectives. Upon completion of the second year of monitoring, a final water quality assessment will be prepared that evaluates the entire set of collected data.

A Quality Assurance Project Plan has been included with this submittal to demonstrate Herrera's quality assurance procedures for this project.

#### 4.1.4 Staff Qualifications

Herrera's key team members provided in Table 1 are available and qualified to provide water quality services to the State of Montana. As indicated, each individual is fully trained and experienced in the environmental or engineering discipline they have provided technical writing documents for.

**Table 1. Herrera Team Members' Qualifications**

<b>Team Members</b>	<b>Overall Years of Experience</b>	<b>Years on Similar Projects</b>	<b>Degrees</b>	<b>Professional Registrations and Relevant Training</b>
Kathleen Adams	11	11	M.S. in Natural Resources, University of Wisconsin-Stevens Point, 1997 B.S. in Wildlife Management, University of New Hampshire, 1991	Implementing the National Environmental Policy Act on Federal Lands, Duke University, 2000
Rob Zisette	23	23	M.S. in Water Resource Management, University of Washington, 1980 B.S. in Environmental Biology, University of Calgary, 1978	OSHA 40-Hour Health and Safety Training for Hazardous Waste Sites, since 1988 Scuba Diving Certification, 1979
John Lenth	10	10	M.S. in Environmental Science, Huxley College, Western Washington University, 1995 B.A. in English, Seattle University, 1988	OSHA 40-Hour health and safety training for hazardous waste sites, 1997 WSDOT Certification as an Erosion and Spill Control Lead, 1997 6-Hour Confined Space Entry Training, 1998 WSDOT Biological Assessment Workshop; 1998
Jennifer Goldsmith	12	12	M.E.M. in Water Resources, Duke University, 1990 B.S. in Geology, Western Washington University, 1986	Watershed Analysis Analyst/Specialist-Hydrology, Riparian, and Public Works Modules, Washington Department of Natural Resources
Dan Bennett	10	10	M.S. Soils Science, University of Washington, 1999 B.S. Forestry and Resource Management, University of California at Berkeley, 1992	6-Hour Confined Space Entry Training, 2001 40-Hour HAZWOP Training, 2002
Michael Cawrse	9	9	M.S. in Environmental Science (Aquatic Ecology), Western Washington University, 1998 B.S. in Microbiology (Molecular Biology), University of Washington, 1989	Wetland Science and Management Certificate, University of Washington, 2001
Alex Svendsen	7	7	M.S. in Soils Science, University of Washington, 2002 B.S. in Geography, University of Utah, 1998	OSHA 40-Hour HAZWOPER Certification and Training, 2003 OSHA 4-Hour Confined Space Entry Certification and Training, 2003 US EPA OSC/START Training, Region 10, 2003
Mark Ewbank, PE	17	17	M.S. in Civil/Environmental Engineering, University of Washington, 1992 B.S. in Civil Engineering, University of Illinois, 1985	Professional Engineer #29434: Washington, 1992



## Project Manager and Key Technical Staff

Kathleen Adams, head of Herrera's Missoula Montana office, will be the project manager and primary point of contact for work orders resulting from this contract. Ms. Adams is a senior natural resources scientist with over 11 years of experience in water quality, wetlands, plant ecology and wildlife. She has successfully managed several projects in Montana including the Flathead Agency Irrigation Project Programmatic Biological Assessment for the Bureau of Indian Affairs. Ms. Adams will provide contract administration. Mark Ewbank, P.E. will serve as principal-in-charge and provide quality assurance for this contract. Mr. Ewbank has over 17 years of experience with surface water management including water quality studies and stormwater management to meet regulatory requirements such as TMDLs.

Rob Zisette, Herrera's Aquatic Science Director, will be the lead technical coordinator for the water quality work orders resulting from this contract. Mr. Zisette has 23 years of professional experience in surface water management and environmental studies. He specializes in preparing water quality monitoring plans, stormwater management plans, watershed management plans, and lake management plans, and conducting water quality assessments, pollutant source tracking investigations, BMP evaluations, TMDL studies, sediment management investigations, aquatic plant management studies, lake diagnostic studies, and lake restoration projects.

Supporting Mr. Zisette for the water quality work on this contract will be John Lenth, Jennifer Goldsmith, Dan Bennett, Mike Cawrse, and Alex Svendsen. Mr. Lenth is a senior environmental scientist with 10 years of experience in aquatic ecology, water quality, hydrology, and watershed management. He has developed a number of statistical models for quantify pollutant loading rates in aquatic systems and is proficient with commercially available software for performing mixing zone analyses. Ms. Goldsmith is a project scientist with 12 years of experience conducting water quality assessments and has extensive experience with water quality regulations including TMDLs. Mr. Bennett, Mr. Cawrse and Mr. Svendsen are scientists with a combined 26 years of experience in developing and implementing water quality monitoring plans and interpreting water quality monitoring data.

Any agency using this contract to procure water quality services can contact Kathleen Adams directly. Ms. Adams will also be the state agency's point of contact for any miscellaneous contractual issues. Once a request has been made for work in this area, Ms. Adams will work with the agency's project manager and Rob Zisette to identify the agency's primary needs and then develop a scope and budget for the project. Rob Zisette will then be the primary technical coordinator, and will perform technical oversight and review of all work.

## Section 4: Offeror Qualifications

### 4.0 State's Right to Investigate and Reject

Herrera understands and will comply.

### 4.1 Offeror Informational Requirements – All Service Categories

Herrera understands and will comply.

### 4.2 Offeror Qualification Requirements – Specific Service Categories

Herrera understands and will comply.

#### 4.1.1 References

Herrera Environmental Consultants has a history of successfully providing services to clients throughout the western United States. As an environmental science and engineering firm, Herrera combines the expertise of our scientists, engineers, and planners to provide an interdisciplinary approach to each project. This specialized approach provides our clients with a greater understanding of each of the key components in every project. In addition, attention to our client's needs and a commitment to satisfying those needs efficiently have been the key to Herrera's success in managing its past and present projects. The following projects exemplify our experience providing water quality monitoring services for reference sites to a variety of clients, as well as provide a client contact for each project that will attest to our capabilities.

Camano Island Watershed Management Plan, Camano Island, WA

*Client: Island County Public Works Department*

*Contact: Jeff Hall, Watershed Project Manager, Island County Public Works, (360) 387-3442 x240,*

*Performance Period: 2002 – Present*

*Contract Amount: \$2,000*

Under an on-call contract with Island County, Herrera was responsible for designing a monitoring program for a water quality assessment of streams on Camano Island. Herrera prepared a quality assurance project plan (QAPP) for collecting baseline data to assess the current status of water quality on Camano Island, identify nonpoint sources of pollution, and develop pollution prevention strategies for the watershed management plan. The QAPP was prepared in accordance with the Centennial Clean Water Fund grant agreement and guidelines published by the Washington Department of Ecology. This plan included a summary of existing information in addition to methods for sample collection and analysis, quality control objectives and procedures, and data assessment and reporting procedures. Herrera is currently implementing the QAPP which includes collecting water samples during 10 storm events over a period of two years for analysis of a comprehensive set of parameters including fecal coliform bacteria, and includes the collection of macroinvertebrate samples from seven major streams on the island. Upon completion of the first year of monitoring, Herrera will prepare a water quality assessment using data collected by Herrera, Island County, and others. Findings from this initial assessment will be used to evaluate whether monitoring procedures should be modified to better meet the study objectives. Upon completion of the second year of monitoring, a final water quality assessment will be prepared that evaluates the entire set of collected data.

Issaquah Highlands Master Plan Development Water Quality Studies, Issaquah, WA

*Client: Port Blakely Communities*

*Contact: Carol Beck, Port Blakely Communities, (425) 391-4700*

*Performance Period: 1992 – Present*

*Contract Amount: \$550,000*

Issaquah Highlands Comprehensive Monitoring. In cooperation with the City of Issaquah, King County, Sammamish Plateau Water and Sewer District, and Port Blakely Communities, Herrera developed the Issaquah Highlands Comprehensive Monitoring Plan. This monitoring plan, which is now being implemented by Herrera, is designed to evaluate construction and post-development impacts on surface and ground water resources of the 2,200-acre Planned Community Development located at Issaquah, Washington. Herrera's staff is conducting hydrologic studies on the site to assess the performance of stormwater retention and infiltration facilities, and to ensure the project is not adversely impacting natural surface water features. To facilitate these studies, Herrera has installed a variety of automated monitoring equipment including pressure transducers, capacitance depth probes, and doppler velocity sensors that are interfaced with data loggers. Automated probes and water samplers are also being employed to provide continuous records of turbidity at selected stream locations and to monitor the pollutant removal efficiency of stormwater treatment facilities. Herrera staff also monitor ground water levels and water quality at three onsite wells. Stream channel stability is being monitored at two onsite streams by surveying elevations at stream cross-sections. Data management, data interpretation, and reporting of all data are conducted on a regular, weekly basis including semi-annual reports that summarize all data collected.

Des Moines Water Quality Monitoring Program, Des Moines, King County, WA

*Client: City of Des Moines, Surface Water Management Utility*

*Contact: Mr. Loren Reinhold, Assistant City Engineer, City of Des Moines Public Works (206) 870-6524*

*Performance Period: 1994 – 2000*

*Contract Amount: \$260,000*

Herrera developed the City of Des Moines Water Quality Monitoring Program to evaluate benefits of the city's stormwater management plan over a 5-year period in three streams located in the City of Des Moines. Herrera prepared the water quality monitoring and quality assurance project plan that was approved by the Department of Ecology. Herrera scientists monitored water quality during five storm events and three base flow periods each year. Herrera also measured stream flow, developed



discharge rating curves, assessed fisheries habitat and benthic invertebrate populations, conducted nonpoint source pollution tracking, validated water quality data, and presented results in annual reports. For the final project report, Herrera evaluated spatial and temporal trends in water quality and benthic invertebrate populations using state-of-the-art statistical procedures.

In addition to water quality monitoring, Herrera also conducted post-restoration stream habitat and vegetation monitoring on the lowermost 400-foot reach of Des Moines Creek. The City of Des Moines had completed restoration of this section of the creek in 1991, and was required by the U.S. Army Corps of Engineers to conduct this monitoring in compliance with the mitigation plan. Herrera biologists reviewed the planting plan identifying the locations of plantings along the reach, and used it to evaluate the existing vegetation conditions. Vegetation characteristics were recorded by counting trees and estimating the percent coverage of shrubs and herbs within each planting area. Survival of plantings was evaluated by comparing the existing coverage of planted species to what was actually planted. The presence of invasive species was also recorded. Stream channel characteristics were assessed by monitoring substrate conditions, vegetative cover, fish habitat, streambank stability, and other features. Recommendations were made to improve conditions by controlling invasive species, planting native vegetation, and properly maintaining the riparian corridor.

#### Freeland Outfall Water Quality Improvement, Freeland, Island County, Washington

*Client: Island County Public Works Department*

*Contact: Phil Cohen, 360.679.7331 ext. 7440*

*Performance Period: 2002 – 2004*

*Contract Amount: \$91,500*

Herrera developed and implemented a quality assurance project plan (QAPP) to characterize water quality in Freeland, WA for Island County Public Works. The QAPP was prepared in accordance with the Centennial Clean Water Fund grant agreement and guidelines published by the Washington Department of Ecology. As part of this monitoring effort, three base flow and eight storm flow samples were collected at four locations within the Freeland drainage basin. Monitoring locations for the study were carefully selected to evaluate pollutant loads from specific land use categories (e.g., urban, residential, and rural), and to evaluate the treatment effectiveness of a stream/wetland system. Data obtained from these monitoring stations is being used to identify the primary sources of water quality impairment within the Freeland drainage basin. In addition, Herrera documented fish habitat conditions in the stream/wetland system using King County Level I stream habitat inventory protocols. Herrera also documented habitat conditions in a tidally-influenced section of the stream/wetland system using the Estuarine Habitat Assessment Protocol that was developed for the Puget Sound Estuary Program. Based on this information, Herrera will make preliminary recommendations to the Island County Public Works for water quality treatment options to address any observed problems.

#### Green-Duwamish Watershed Water Quality Assessment, Seattle, Washington

*Client: King County DNRP / WLRD*

*Contact: Douglas Henderson, Project Manager, (206) 263-6317*

*Performance Period: 2003 – Present*

*Contract Amount: \$400,000*

Herrera is currently providing water quality, hydrology, land use, and biological data evaluation services to King County for the Green-Duwamish Watershed Water Quality Assessment. These services include preparation of two water quality data reports, a water quality pollutant loadings report, two benthic macroinvertebrate reports, and a microbial source tracking report. For the first water quality data report, Herrera has compiled and analyzed an extensive set of water quality and hydrologic monitoring data collected in 2001 and 2002 for 18 monitoring sites in the 264 square mile Green-Duwamish watershed (WRIA 9). Herrera will compile and evaluate data collected in 2003 for the second water quality data report. Hydrologic data analysis conducted for these water quality data reports includes the development of algorithms for separating base and storm flow portions of the hydrographs over the three year study period. The water quality loadings report will include calculations of loadings for each water quality parameter using discharge data for the monitored basins, estimates of loading factors for land use categories using the data collected, and detailed statistical analyses for

evaluating potential relationships between pollutant concentrations and various environmental conditions. Herrera is also coordinating the preparation of two benthic macroinvertebrate reports that will evaluate data collected in 2002 and 2003 for approximately 200 sites in the Green-Duwamish watershed and the Cedar-Sammamish-Washington watershed (WRIA 8). These reports will assess habitat conditions in these watersheds based on the Benthic Index of Biotic Integrity (B-IBI) scores that are calculated from the benthic invertebrate data, and will evaluate relationships between the B-IBI scores and various water quality, hydrology, land use, and fish habitat conditions. Using information from the analyses described above, Herrera will make recommendations to King County for a long-term monitoring program in the Green-Duwamish watershed. Finally, Herrera will prepare a microbial source tracking report that evaluates genetic fingerprinting data collected for *E. coli* bacteria that have been isolated from water samples collected within the watershed.

#### 4.1.2 Company Profile and Experience

Herrera Environmental Consultants, Inc. (Herrera) has been providing a diverse range of civil / environmental engineering, environmental science, and planning services to clients throughout the western United States, since 1980. Herrera offers expertise in most aspects of environmental science and engineering services, including environmental and regulatory compliance, permitting, and restoration and mitigation, with additional expertise in public policy development, environmental training, and technical publications, as well as project planning, design, and storm water and drainage design services.

Herrera's Montana branch office, and main office for Montana-related services, is located in Missoula. During the last four years, Herrera has established this Montana office that staffed by long-time Montana residents, who have gained professional experience in Montana and surrounding areas. In addition to our Montana staff, a high level of focused expertise in environmental science, engineering, permitting, planning and public involvement is available from Herrera's Seattle and Portland offices.

Herrera has provided water quality and surface water management services for over 20 years throughout the western states. Herrera's work conducting water quality and sediment investigations and developing management strategies for water quality improvement and protection of aquatic habitats, has established us as regional water quality experts. Herrera's expertise encompasses successful planning, implementation, and design strategies that have been applied to projects throughout the west for clients that include federal, state, and local agencies, as well as private sector clients. Our staff members are thoroughly familiar with the surface water and drinking water regulations and standards established by U.S. EPA and various state agencies. Our long-term water quality monitoring experience includes establishing and sampling specific reference sites in lakes, streams, rivers, and wetlands. Herrera staff are proficient with traditional parametric statistics and more specialized nonparametric techniques that are often required for analyzing water quality data for reference and project sites. Our staff are also well versed in the use of multivariate clustering and ordination algorithms that can be used to detect and explore trends in water quality and/or biological data. We have applied these state-of-the-art techniques for assessing impacts of wastewater discharges, stormwater runoff, and other pollutant sources to receiving waters from a wide range of land use activities.

The following individuals are experienced in water quality monitoring and assessment. Resumes further detailing this experience follow these brief summaries.

##### **Kathleen Adams, Senior Natural Resource Scientist / Wildlife Biologist – Project Manager**

Ms. Adams, a senior natural resource scientist and head of Herrera's Missoula, Montana office, has experience in wildlife, wetland, and plant ecology. Her consulting expertise includes identifying and describing sensitive areas and upland vegetative communities, and evaluating wildlife and fisheries habitat and use for NEPA/SEPA compliance, Endangered Species Act compliance, and environmental permitting. Ms. Adams has conducted and prepared biological assessments for construction projects for state transportation agencies in Washington and Montana, and for the Federal Highway Administration. Ms. Adams has also facilitated agreement between regulatory and proponent agencies

on wetland mitigation for high impact projects. She has a wide range of field experience including upland and wetland plant identification and sampling, rare plant surveys, songbird point counts, waterfowl surveys, small mammal and herpetological surveys, wetland delineations, and stream surveys.

#### **Rob Zisette, Aquatic Science Director – Technical Lead**

Mr. Zisette, Herrera's aquatic science director, has 23 years of professional experience specializing in surface water management, including water quality assessments, stormwater management plans, aquatic plant management studies, lake restoration projects, and environmental impact statements. He has developed and implemented monitoring and quality assurance project plans for various freshwater and marine water and sediment quality investigations. Mr. Zisette has evaluated nonpoint source pollution and the effects of best management practices (BMPs) in streams and urban drainage basins. He has assessed benthic invertebrate populations, fish habitat, and riparian conditions in streams. Mr. Zisette has mapped aquatic plants, evaluated aquatic plant management techniques, assessed plankton communities, identified nutrient sources, and characterized taste and odor sources in lakes and drinking water reservoirs. Additional experience includes water quality impact analysis for solid and hazardous waste management projects, dredge disposal analysis for marine sediment management projects, laboratory analysis of water samples for various chemical and biological parameters, and validation of field and laboratory data.

#### **John Lenth, Senior Environmental Scientist**

Mr. Lenth is a senior environmental scientist with 10 years of experience in aquatic ecology, water quality, hydrology, and watershed management. He has a broad familiarity with field and laboratory procedures for conducting water quality studies in both lakes and streams. He has implemented several long-term water quality monitoring projects designed to assess the effectiveness of best management practices in controlling nonpoint source pollution from urban and agricultural land use. Mr. Lenth's background includes experience performing biological assessments of water quality using aquatic macroinvertebrates. He has used a wide variety of sampling techniques for aquatic macroinvertebrates and is skilled in freshwater invertebrate taxonomy. Mr. Lenth also has extensive experience in data management and statistical analysis. His background in statistics includes knowledge of both univariate and multivariate techniques for examining patterns in biological and water quality data. Mr. Lenth is highly proficient at installing and monitoring field water quality instruments, having installed and programmed a wide variety of devices for the remote collection of hydrologic and water quality data. His skills also include evaluating fish habitat quality in streams, mapping of habitat features with differential GPS, implementing quality assurance and quality control protocols, and analyzing water samples for various chemical and biological parameters. He has also been active in educating community groups on issues related to water quality, watershed management, and benthic ecology.

#### **Jennifer B. Goldsmith, Environmental Scientist**

Ms. Goldsmith has 12 years of experience conducting natural resource assessments throughout the Pacific Northwest. Her professional expertise includes ground water and surface water quality sampling, development of water quality monitoring programs, analysis of water quality data and impact prediction, forestry, and storm water modeling. She has completed Washington State Watershed Analysis Level 1 and 2 Riparian Function Assessments of canopy closure and stream temperature for numerous watersheds. Ms. Goldsmith has extensive experience preparing water quality analysis documentation for a variety of environmental impact statements, environmental assessments, and permit applications. She is familiar with Timber/Fish/Wildlife (T/F/W) guidelines and has implemented these guidelines to assess fisheries conditions and identify resource sensitivities. In addition, Ms. Goldsmith has prepared water resource, geology and soils existing conditions and impacts from various timber management options for NEPA environmental assessments. Ms. Goldsmith was a member of the team of scientists and biologists that conducted the first habitat conservation plan (HCP) in the state of Washington.

#### Dan Bennett, Staff Environmental Scientist

Mr. Bennett is an environmental scientist with 10 years of experience in a wide variety of disciplines including water quality, aquatic ecology, soil science, erosion control, and forest and watershed management. He is familiar with a wide array of field and laboratory procedures for conducting water quality monitoring and investigations of stream and soil quality, and assessing forests for habitat and timber resources. Mr. Bennett has implemented several water quality monitoring projects designed to assess the effectiveness of best management practices in controlling runoff from construction projects and from the use of soil amendments. He has conducted studies of biotic integrity of streams using indices of benthic-macroinvertebrate health. Mr. Bennett is versed in surveying and map-making techniques, and has designed and implemented geographic information system (GIS) projects.

#### Michael C. Cawrse, Environmental Scientist

Mr. Cawrse is an environmental scientist with over 5 years of experience in water quality, aquatic ecology, and wetland delineation. He is familiar with field and laboratory procedures for conducting water quality studies of streams and lakes. He has implemented several long term monitoring studies designed to assess land use impacts on water quality and riparian habitat. Mr. Cawrse has additional experience with data management and statistical analysis. Other skills include wetland delineation, aquatic and riparian plant identification, aquatic macroinvertebrate identification, and the analysis of water samples for various chemical and biological parameters. He also has experience with toxicity testing of fresh and salt water. Mr. Cawrse has also administered several lake management and marine resource citizen advisory committees.

#### Alex Svendsen, Staff Environmental Scientist

Alex Svendsen is an environmental scientist with experience in water quality, environmental restoration, and remediation. His comprehensive water quality monitoring experience includes collecting water samples, analyzing turbidity, and monitoring sediment disposal for construction projects. He has implemented and analyzed best management practices and erosion control measures for numerous construction projects. Mr. Svendsen has a broad knowledge of a variety of field and laboratory procedures used for monitoring and investigating streams, wetlands, lakes, and soils. He has installed, programmed, and maintained automated equipment for monitoring surface and groundwater hydrology and water quality. Mr. Svendsen is familiar with the procedures for measuring pH, conductivity, turbidity, heavy metals, dissolved oxygen, and bacteria in water samples.

#### Mark Ewbank, P.E., Principal Engineer

Mark Ewbank, Principal Engineer and Herrera's Director of Surface Water Engineering, has 17 years of experience in water quality, water pollution control, stormwater management, stream restoration, and related hydrologic and hydraulic analyses. Mr. Ewbank has conducted numerous assessments of hydrologic conditions in natural and developed environments and is thoroughly familiar with the development of stormwater treatment and detention system designs, as well as applications of source control best management practices for the protection of surface and ground water. He has conducted analyses of the effects of various pollutants on streams, lakes, wetlands, and estuaries, and analyzed alternative strategies for effectiveness in controlling surface water pollution. He has developed estimates of potential soil erosion from construction projects and prepared erosion and sediment control plans and designs. Mr. Ewbank has contributed to the design of several stream restoration projects, and managed Herrera's multi-disciplinary design teams on some of those projects. Mr. Ewbank has experience in developing water quality monitoring programs to assess existing conditions and in designing stormwater control facilities for residential, commercial, and industrial land uses. In addition, Mr. Ewbank has experience in developing supporting information for NPDES permit applications and compliance documents and all components of Stormwater Pollution Prevention Plans (SWPPP). Mr. Ewbank has also determined impacts of forest harvesting practices on runoff processes and related impacts on streams and instream habitat. Mr. Ewbank has the ability to direct multidisciplinary work efforts involving diverse tasks and budgets on a variety of environmental engineering projects.

#### 4.1.3 Method of Providing Services and Quality Assurance

Herrera uses a two-tiered product review system to ensure high quality and accuracy of all work. Under the first tier, the project manager will provide initial review, and has major responsibility for developing technical and design reports that are accurate and thorough (including performance of fieldwork). The principal-in-charge, will provide second-tier review and holds ultimate responsibility for the technical integrity of work performed by our staff. This final review and approval of all work products is the last step in a series of checks and balances that ensures refinement and review of work as it progresses. No draft documents will be issued to the State until Herrera's review process has occurred. These well-established review procedures enhance Herrera's ability to meet the State's needs throughout the duration of this contract and ensure that all work products are of the highest quality.

Herrera has recent experience that demonstrates our capabilities and methods of providing water quality assessment services. A specific example that conveys this experience in water quality services is Camano Island Watershed Management Plan. The project is scheduled to be completed on time and within budget. This example project illustrates the methodology used by Herrera staff in gathering and analyzing water quality data.

Under an on-call contract with Island County, Herrera was responsible for designing a monitoring program for a water quality assessment of streams on Camano Island. Herrera prepared a quality assurance project plan (QAPP) for collecting baseline data to assess the current status of water quality on Camano Island, identifying nonpoint sources of pollution, and developing pollution prevention strategies for the watershed management plan. The QAPP was prepared in accordance with the Centennial Clean Water Fund grant agreement and guidelines published by the Washington Department of Ecology. This plan included a summary of existing information in addition to methods for sample collection and analysis, quality control objectives and procedures, and data assessment and reporting procedures. Herrera is currently implementing the QAPP which includes collecting water samples during 10 storm events over a period of two years for analysis of a comprehensive set of parameters including fecal coliform bacteria, and includes the collection of macroinvertebrate samples from seven major streams on the island. Upon completion of the first year of monitoring, Herrera will prepare a water quality assessment using data collected by Herrera, Island County, and others. Findings from this initial assessment will be used to evaluate whether monitoring procedures should be modified to better meet the study objectives. Upon completion of the second year of monitoring, a final water quality assessment will be prepared that evaluates the entire set of collected data.

A Quality Assurance Project Plan has been included with this submittal to demonstrate Herrera's quality assurance procedures for this project.



#### 4.1.4 Staff Qualifications

Herrera's key team members provided in Table 1 are available and qualified to provide water quality services to the State of Montana. As indicated, each individual is fully trained and experienced in the environmental or engineering discipline they have provided technical writing documents for.

**Table 1. Herrera Team Members' Qualifications**

Team Members	Overall Years of Experience	Years on Similar Projects	Degrees	Professional Registrations and Relevant Training
Kathleen Adams	11	11	M.S. in Natural Resources, University of Wisconsin-Stevens Point, 1997 B.S. in Wildlife Management, University of New Hampshire, 1991	Implementing the National Environmental Policy Act on Federal Lands, Duke University, 2000
Rob Zisette	23	23	M.S. in Water Resource Management, University of Washington, 1980 B.S. in Environmental Biology, University of Calgary, 1978	OSHA 40-Hour Health and Safety Training for Hazardous Waste Sites, since 1988 Scuba Diving Certification, 1979
John Lenth	10	10	M.S. in Environmental Science, Huxley College, Western Washington University, 1995 B.A. in English, Seattle University, 1988	OSHA 40-Hour health and safety training for hazardous waste sites, 1997 WSDOT Certification as an Erosion and Spill Control Lead, 1997 6-Hour Confined Space Entry Training, 1998 WSDOT Biological Assessment Workshop, 1998
Jennifer Goldsmith	12	12	M.E.M. in Water Resources, Duke University, 1990 B.S. in Geology, Western Washington University, 1986	Watershed Analysis Analyst/Specialist-Hydrology, Riparian, and Public Works Modules, Washington Department of Natural Resources
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#### 4.1.1 References

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*Client: Port Blakely Communities*

*Contact: Carol Beck, Port Blakely Communities, (425) 391-4700*

*Performance Period: 1992 – Present*

*Contract Amount: \$550,000*

Issaquah Highlands Comprehensive Monitoring. In cooperation with the City of Issaquah, King County, Sammamish Plateau Water and Sewer District, and Port Blakely Communities, Herrera developed the Issaquah Highlands Comprehensive Monitoring Plan. This monitoring plan, which is now being implemented by Herrera, is designed to evaluate construction and post-development impacts on surface and ground water resources of the 2,200-acre Planned Community Development located at Issaquah, Washington. Herrera's staff is conducting hydrologic studies on the site to assess the performance of stormwater retention and infiltration facilities, and to ensure the project is not adversely impacting natural surface water features. To facilitate these studies, Herrera has installed a variety of automated monitoring equipment including pressure transducers, capacitance depth probes, and doppler velocity sensors that are interfaced with data loggers. Automated probes and water samplers are also being employed to provide continuous records of turbidity at selected stream locations and to monitor the pollutant removal efficiency of stormwater treatment facilities. Herrera staff also monitor ground water levels and water quality at three onsite wells. Stream channel stability is being monitored at two onsite streams by surveying elevations at stream cross-sections. Data management, data interpretation, and reporting of all data are conducted on a regular, weekly basis including semi-annual reports that summarize all data collected.

#### Willapa River Microbial Source Tracking Study, Raymond, Pacific County, Washington

*Client: Pacific County Dept. of Community Development*

*Contact: Bryan Harrison, 360-875-9356*

*Performance Period: 8/2003 – 7/2005*

*Contract Amount: \$55,000*

Herrera developed a microbial source tracking study using a genetic fingerprinting technique to identify sources of fecal coliform bacteria in the Willapa River in Pacific County, Washington. This study was designed for implementation of the fecal coliform bacteria total maximum daily load (TMDL) developed by the Washington Department of Ecology in collaboration with the local watershed committee. Herrera prepared the sampling and analysis plan in accordance with Ecology guidelines, and trained local staff to collect fecal coliform bacteria samples and water quality data. Herrera is coordinating the collection of river water samples, and the collection of fecal waste samples from the watershed to update the bacteria DNA library with known sources from the Willapa River watershed. Herrera is coordinating the laboratory analysis of the collected bacteria cultures for isolation of pure *E. coli* strains and DNA sequencing (molecular ribotyping). Herrera will compile the bacteria enumeration and DNA matching results upon completion of one year of sampling, and will evaluate spatial, temporal, and hydrologic trends in the matching results and fecal coliform bacteria concentrations. A final project report will be prepared describing the study methods, comparing fecal coliform bacteria results to historical data, and will evaluating the fecal source matching results to assist the local committee with implementation of the fecal coliform bacteria TMDL.

#### Stormwater Microbial Source Tracking for SeaTac Airport, SeaTac, WA

*Client: Port of Seattle*

*Contact: Scott Tobiason, (206) 444-6798*

*Performance Period: 1999 – 2001*

*Contract Amount: \$60,000*

Herrera assisted the Port of Seattle with the Seattle-Tacoma International Airport Stormwater Management Program by employing a genetic fingerprinting technique to characterize sources of fecal coliform bacteria contamination in runoff to Des Moines Creek. Herrera developed the monitoring plan, collected animal and human source samples at various locations in the airport drainage basins, and coordinated stormwater sampling and analysis efforts by others. *Escherichia coli* DNA were isolated from the source and stormwater samples, and were compared to each other and to *E. coli* DNA from known fecal sources in a national database containing thousands of unique genotypes. Herrera



prepared a comprehensive report of the study findings. The matching results identified birds as the predominant fecal source at the airport, while human sources were also present. The Port of Seattle used these findings to develop additional source control actions that included removal of pigeon habitat and modification of aircraft wastewater handling procedures.

#### Green-Duwamish Watershed Water Quality Assessment, Seattle, Washington

*Client: King County DNRP / WLRD*

*Contact: Douglas Henderson, Project Manager, (206) 263-6317*

*Performance Period: 2003 – Present*

*Contract Amount: \$400,000*

Herrera is currently providing water quality, hydrology, land use, and biological data evaluation services to King County for the Green-Duwamish Watershed Water Quality Assessment. These services include preparation of two water quality data reports, a water quality pollutant loadings report, two benthic macroinvertebrate reports, and a microbial source tracking report. For the first water quality data report, Herrera has compiled and analyzed an extensive set of water quality and hydrologic monitoring data collected in 2001 and 2002 for 18 monitoring sites in the 264 square mile Green-Duwamish watershed (WRIA 9). Herrera will compile and evaluate data collected in 2003 for the second water quality data report. Hydrologic data analysis conducted for these water quality data reports includes the development of algorithms for separating base and storm flow portions of the hydrographs over the three year study period. The water quality loadings report will include calculations of loadings for each water quality parameter using discharge data for the monitored basins, estimates of loading factors for land use categories using the data collected, and detailed statistical analyses for evaluating potential relationships between pollutant concentrations and various environmental conditions. Herrera is also coordinating the preparation of two benthic macroinvertebrate reports that will evaluate data collected in 2002 and 2003 for approximately 200 sites in the Green-Duwamish watershed and the Cedar-Sammamish-Washington watershed (WRIA 8). These reports will assess habitat conditions in these watersheds based on the Benthic Index of Biotic Integrity (B-IBI) scores that are calculated from the benthic invertebrate data, and will evaluate relationships between the B-IBI scores and various water quality, hydrology, land use, and fish habitat conditions. Using information from the analyses described above, Herrera will make recommendations to King County for a long-term monitoring program in the Green-Duwamish watershed. Finally, Herrera will prepare a microbial source tracking report that evaluates genetic fingerprinting data collected for *E. coli* bacteria that have been isolated from water samples collected within the watershed.

#### Freeland Outfall Water Quality Improvement, Freeland, Island County, Washington

*Client: Island County Public Works Department*

*Contact: Phil Cohen, 360.679.7331 ext. 7440*

*Performance Period: 2002 – 2004*

*Contract Amount: \$91,500*

Herrera developed and implemented a quality assurance project plan (QAPP) to characterize water quality in Freeland, WA for Island County Public Works. The QAPP was prepared in accordance with the Centennial Clean Water Fund grant agreement and guidelines published by the Washington Department of Ecology. As part of this monitoring effort, three base flow and eight storm flow samples were collected at four locations within the Freeland drainage basin. Monitoring locations for the study were carefully selected to evaluate pollutant loads from specific land use categories (e.g., urban, residential, and rural), and to evaluate the treatment effectiveness of a stream/wetland system. Data obtained from these monitoring stations is being used to identify the primary sources of water quality impairment within the Freeland drainage basin. In addition, Herrera documented fish habitat conditions in the stream/wetland system using King County Level I stream habitat inventory protocols. Herrera also documented habitat conditions in a tidally-influenced section of the stream/wetland system using the Estuarine Habitat Assessment Protocol that was developed for the Puget Sound Estuary Program. Based on this information, Herrera will make preliminary recommendations to the Island County Public Works for water quality treatment options to address any observed problems.

#### 4.1.2 Company Profile and Experience

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Herrera has developed management strategies for water quality improvement and protection of aquatic habitats for over 20 years. Herrera has conducted water quality and sediment investigations for numerous lakes, streams, rivers, and wetlands located throughout the western states. Our expertise encompasses successful planning, implementation, and design strategies that have been applied to projects throughout the west for clients that include federal, state, and local agencies, as well as private sector clients. Our staff members are thoroughly familiar with the surface water and drinking water regulations and standards established by U.S. EPA and various state agencies. Herrera scientists have identified pollutant sources and targets, assessed and allocated pollutant source loads, and determined total maximum daily loads (TMDLs) based on established water quality criteria for receiving waters on 303(d) lists. We have conducted comprehensive water quality monitoring and habitat surveys of water bodies in urban, agricultural, and forested watersheds for the assessment of pollutant sources, impacts, and loads. Herrera staff have used various sampling techniques that include ultra-clean technique for low levels of pollutants, continuous long-term monitoring of multiple field parameters, automatic samplers for collection of stormwater samples, and rapid bioassessment protocols for assessing periphyton and macroinvertebrate communities. Herrera employs various analytical techniques to characterize pollutant sources including the identification of hydrocarbon compounds and sources, and genetic fingerprinting of fecal coliform bacteria. For several fecal coliform bacteria TMDL projects, Herrera has used the state-of-the-art ribotyping method, developed by Dr. Mansour Samadpour of the University of Washington Department of Environmental Health, to identify specific human and animal sources of *E. coli* bacteria isolated from receiving waters. The *E. coli* DNA library used for this method has greatly expanded to include bacteria sources from throughout the United States, such that 95 percent of the receiving water isolates matched known sources for a recent study conducted by Herrera that did not include collection of new source bacteria from the study watershed.

The following individuals are experienced in TMDL and water quality assessment services. Resumes further detailing this experience follow these brief summaries.

##### **Kathleen Adams, Senior Natural Resource Scientist / Wildlife Biologist – Project Manager**

Ms. Adams, a senior natural resource scientist and head of Herrera's Missoula, Montana office, has experience in wildlife, wetland, and plant ecology. Her consulting expertise includes identifying and describing sensitive areas and upland vegetative communities, and evaluating wildlife and fisheries habitat and use for NEPA/SEPA compliance, Endangered Species Act compliance, and environmental permitting. Ms. Adams has conducted and prepared biological assessments for construction projects for state transportation agencies in Washington and Montana, and for the Federal Highway Administration. Ms. Adams has also facilitated agreement between regulatory and proponent agencies on wetland mitigation for high impact projects. She has a wide range of field experience including upland and wetland plant identification and sampling, rare plant surveys, songbird point counts, waterfowl surveys, small mammal and herpetological surveys, wetland delineations, and stream surveys.

#### Rob Zisette, Aquatic Science Director – Technical Lead

Mr. Zisette, Herrera's aquatic science director, has 23 years of professional experience specializing in surface water management, including water quality assessments, stormwater management plans, aquatic plant management studies, lake restoration projects, and environmental impact statements. He has developed and implemented monitoring and quality assurance project plans for various freshwater and marine water and sediment quality investigations. Mr. Zisette has evaluated nonpoint source pollution and the effects of best management practices (BMPs) in streams and urban drainage basins. He has assessed benthic invertebrate populations, fish habitat, and riparian conditions in streams. Mr. Zisette has mapped aquatic plants, evaluated aquatic plant management techniques, assessed plankton communities, identified nutrient sources, and characterized taste and odor sources in lakes and drinking water reservoirs. Additional experience includes water quality impact analysis for solid and hazardous waste management projects, dredge disposal analysis for marine sediment management projects, laboratory analysis of water samples for various chemical and biological parameters, and validation of field and laboratory data.

#### John Lenth, Senior Environmental Scientist

Mr. Lenth is a senior environmental scientist with 10 years of experience in aquatic ecology, water quality, hydrology, and watershed management. He has a broad familiarity with field and laboratory procedures for conducting water quality studies in both lakes and streams. He has implemented several long-term water quality monitoring projects designed to assess the effectiveness of best management practices in controlling nonpoint source pollution from urban and agricultural land use. Mr. Lenth's background includes experience performing biological assessments of water quality using aquatic macroinvertebrates. He has used a wide variety of sampling techniques for aquatic macroinvertebrates and is skilled in freshwater invertebrate taxonomy. Mr. Lenth also has extensive experience in data management and statistical analysis. His background in statistics includes knowledge of both univariate and multivariate techniques for examining patterns in biological and water quality data. Mr. Lenth is highly proficient at installing and monitoring field water quality instruments, having installed and programmed a wide variety of devices for the remote collection of hydrologic and water quality data. His skills also include evaluating fish habitat quality in streams, mapping of habitat features with differential GPS, implementing quality assurance and quality control protocols, and analyzing water samples for various chemical and biological parameters. He has also been active in educating community groups on issues related to water quality, watershed management, and benthic ecology.

#### Jennifer B. Goldsmith, Environmental Scientist

Ms. Goldsmith has 12 years of experience conducting natural resource assessments throughout the Pacific Northwest. Her professional expertise includes ground water and surface water quality sampling, development of water quality monitoring programs, analysis of water quality data and impact prediction, forestry, and storm water modeling. Ms. Goldsmith has extensive experience preparing water quality analysis documentation for a variety of environmental impact statements, environmental assessments, and permit applications. She has extensive knowledge of the Clean Water Act specifically the 303(d) listing procedures and the Total Maximum Daily Load (TMDL) implementation process. She has completed Washington State Watershed Analysis Level 1 and 2 Riparian Function Assessments of canopy closure and stream temperature for numerous watersheds. She is familiar with Washington State Timber/Fish/Wildlife (T/F/W) guidelines and has implemented these guidelines to assess fisheries conditions and identify resource sensitivities. In addition, Ms. Goldsmith has prepared water resource, geology and soils existing conditions and impacts from various timber management options for NEPA environmental assessments. Ms. Goldsmith was a member of the team of scientists and biologists that conducted the first habitat conservation plan (HCP) in the state of Washington.

#### Dan Bennett, Staff Environmental Scientist

Mr. Bennett is an environmental scientist with 10 years of experience in a wide variety of disciplines including water quality, aquatic ecology, soil science, erosion control, and forest and watershed management. He is familiar with a wide array of field and laboratory procedures for conducting water quality monitoring and investigations of stream and soil quality, and assessing forests for habitat and

timber resources. Mr. Bennett has implemented several water quality monitoring projects designed to assess the effectiveness of best management practices in controlling runoff from construction projects and from the use of soil amendments. He has conducted studies of biotic integrity of streams using indices of benthic-macroinvertebrate health. Mr. Bennett is versed in surveying and map-making techniques, and has designed and implemented geographic information system (GIS) projects.

#### Michael C. Cawrse, Environmental Scientist

Mr. Cawrse is an environmental scientist with over 5 years of experience in water quality, aquatic ecology, and wetland delineation. He is familiar with field and laboratory procedures for conducting water quality studies of streams and lakes. He has implemented several long term monitoring studies designed to assess land use impacts on water quality and riparian habitat. Mr. Cawrse has additional experience with data management and statistical analysis. Other skills include wetland delineation, aquatic and riparian plant identification, aquatic macroinvertebrate identification, and the analysis of water samples for various chemical and biological parameters. He also has experience with toxicity testing of fresh and salt water. Mr. Cawrse has also administered several lake management and marine resource citizen advisory committees.

#### Alex Svendsen, Staff Environmental Scientist

Alex Svendsen is an environmental scientist with experience in water quality, hazardous waste remediation, and environmental restoration. He has implemented and analyzed best management practices and erosion control measures for numerous construction projects. His remediation experience includes utilizing residual-based soil amendments to neutralize acidic/heavy metal contaminated mine tailings. His familiarity with cutting edge in-situ remediation techniques promotes cost-effective means of remediating heavy metal contaminated soils to EPA Superfund specifications. Mr. Svendsen has experience restoring native vegetation on devastated lands using organic amendments. In addition, he has a broad knowledge of a variety of field and laboratory procedures used for monitoring and investigating streams, wetlands, lakes, and soils.

#### Mark Ewbank, P.E., Principal Engineer

Mark Ewbank, Principal Engineer and Herrera's Director of Surface Water Engineering, has 17 years of experience in water quality, water pollution control, stormwater management, stream restoration, and related hydrologic and hydraulic analyses. Mr. Ewbank has conducted numerous assessments of hydrologic conditions in natural and developed environments and is thoroughly familiar with the development of stormwater treatment and detention system designs, as well as applications of source control best management practices for the protection of surface and ground water. He has conducted analyses of the effects of various pollutants on streams, lakes, wetlands, and estuaries, and analyzed alternative strategies for effectiveness in controlling surface water pollution. He has developed estimates of potential soil erosion from construction projects and prepared erosion and sediment control plans and designs. Mr. Ewbank has contributed to the design of several stream restoration projects, and managed Herrera's multi-disciplinary design teams on some of those projects. Mr. Ewbank has experience in developing water quality monitoring programs to assess existing conditions and in designing stormwater control facilities for residential, commercial, and industrial land uses. In addition, Mr. Ewbank has experience in developing supporting information for NPDES permit applications and compliance documents and all components of Stormwater Pollution Prevention Plans (SWPPP). Mr. Ewbank has also determined impacts of forest harvesting practices on runoff processes and related impacts on streams and instream habitat. Mr. Ewbank has the ability to direct multidisciplinary work efforts involving diverse tasks and budgets on a variety of environmental engineering projects.

#### 4.1.3 Method of Providing Services and Quality Assurance

Herrera uses a two-tiered product review system to ensure high quality and accuracy of all work. Under the first tier, the project manager will provide initial review, and has major responsibility for developing technical and design reports that are accurate and thorough (including performance of fieldwork). The principal-in-charge, will provide second-tier review and holds ultimate responsibility for the technical integrity of work performed by our staff. This final review and approval of all work

products is the last step in a series of checks and balances that ensures refinement and review of work as it progresses. No draft documents will be issued to the State until Herrera's review process has occurred. These well-established review procedures enhance Herrera's ability to meet the State's needs throughout the duration of this contract and ensure that all work products are of the highest quality.

Herrera has recent experience that demonstrates our capabilities and methods of providing TMDL-related services. A specific example that conveys this experience in TMDLs is the Willapa River Microbial Source Tracking Study. The project is scheduled to be completed on time and within budget. This example project illustrates the methodology used by Herrera staff in gathering and analyzing water quality data for TMDL studies.

Herrera developed a microbial source tracking study to identify sources of fecal coliform bacteria in the Willapa River for implementation of the fecal coliform bacteria TMDL by Pacific County, Washington. Herrera staff members prepared the sampling and analysis plan and trained local staff to collect fecal coliform bacteria samples and water quality data. The Institute of Environmental Health was contracted to conduct the laboratory molecular ribotyping studies to identify specific sources of fecal coliform bacteria. A final project report will be prepared that will describe the study methods, compare fecal coliform bacteria results to historical data and will evaluate the fecal source matching results as a function of hydrology, season, and location in the watershed.

A Quality Assurance Project Plan has been included with this submittal to demonstrate Herrera's quality assurance procedures for this project.



#### 4.1.4 Staff Qualifications

Herrera's key team members provided in Table 1 are available and qualified to provide water quality services to the State of Montana. As indicated, each individual is fully trained and experienced in the environmental or engineering discipline they have provided technical writing documents for.

**Table 1. Herrera Team Members' Qualifications**

<b>Team Members</b>	<b>Overall Years of Experience</b>	<b>Years on Similar Projects</b>	<b>Degrees</b>	<b>Professional Registrations and Relevant Training</b>
Kathleen Adams	11	11	M.S. in Natural Resources, University of Wisconsin-Stevens Point, 1997 B.S. in Wildlife Management, University of New Hampshire, 1991	Implementing the National Environmental Policy Act on Federal Lands, Duke University, 2000
Rob Zisette	23	23	M.S. in Water Resource Management, University of Washington, 1980 B.S. in Environmental Biology, University of Calgary, 1978	OSHA 40-Hour Health and Safety Training for Hazardous Waste Sites, since 1988 Scuba Diving Certification, 1979
John Lenth	10	10	M.S. in Environmental Science, Huxley College, Western Washington University, 1995 B.A. in English, Seattle University, 1988	OSHA 40-Hour health and safety training for hazardous waste sites, 1997 WSDOT Certification as an Erosion and Spill Control Lead, 1997 6-Hour Confined Space Entry Training, 1998 WSDOT Biological Assessment Workshop; 1998
Jennifer Goldsmith	12	12	M.E.M. in Water Resources, Duke University, 1990 B.S. in Geology, Western Washington University, 1986	Watershed Analysis Analyst/Specialist-Hydrology, Riparian, and Public Works Modules, Washington Department of Natural Resources
Dan Bennett	10	10	M.S. Soils Science, University of Washington, 1999 B.S. Forestry and Resource Management, University of California at Berkeley, 1992	6-Hour Confined Space Entry Training, 2001 40-Hour HAZWOP Training, 2002
Michael Cawrse	9	9	M.S. in Environmental Science (Aquatic Ecology), Western Washington University, 1998 B.S. in Microbiology (Molecular Biology), University of Washington, 1989	Wetland Science and Management Certificate, University of Washington, 2001
Alex Svendsen	7	7	M.S. in Soils Science, University of Washington, 2002 B.S. in Geography, University of Utah, 1998	OSHA 40-Hour HAZWOPER Certification and Training, 2003 OSHA 4-Hour Confined Space Entry Certification and Training, 2003 US EPA OSC/START Training, Region 10, 2003
Mark Ewbank, PE	17	17	M.S. in Civil/Environmental Engineering, University of Washington, 1992 B.S. in Civil Engineering, University of Illinois, 1985	Professional Engineer #29434: Washington, 1992

## Project Manager and Key Technical Staff

Kathleen Adams, head of Herrera's Missoula Montana office, will be the project manager and primary point of contact for work orders resulting from this contract. Ms. Adams is a senior natural resources scientist with over 11 years of experience in water quality, wetlands, plant ecology and wildlife. She has successfully managed several projects in Montana including the Flathead Agency Irrigation Project Programmatic Biological Assessment for the Bureau of Indian Affairs. Ms. Adams will provide contract administration. Mark Ewbank, P.E. will serve as principal-in-charge and provide quality assurance for this contract. Mr. Ewbank has over 17 years of experience with surface water management including water quality studies and stormwater management to meet regulatory requirements such as TMDLs.

Rob Zisette, Herrera's Aquatic Science Director, will be the lead technical coordinator for the TMDL work orders resulting from this contract. Mr. Zisette has 23 years of professional experience in surface water management and environmental studies. He specializes in preparing water quality monitoring plans, stormwater management plans, watershed management plans, and lake management plans, and conducting water quality assessments, pollutant source tracking investigations, BMP evaluations, TMDL studies, sediment management investigations, aquatic plant management studies, lake diagnostic studies, and lake restoration projects.

Supporting Rob for the TMDL work on this contract will be John Lenth, Jennifer Goldsmith, Dan Bennett, Mike Cawrse, and Alex Svendsen. Mr. Lenth is a senior environmental scientist with 10 years of experience in aquatic ecology, water quality, hydrology, and watershed management. He has developed a number of statistical models for quantify pollutant loading rates in aquatic systems and is proficient with commercially available software for performing mixing zone analyses. Ms. Goldsmith is a project scientist with 12 years of experience conducting water quality assessments and has extensive experience with water quality regulations including TMDLs. Mr. Bennett, Mr. Cawrse and Mr. Svendsen are scientists with a combined 26 years of experience in developing and implementing water quality monitoring plans and interpreting water quality monitoring data.

Any agency using this contract to procure TMDL services can contact Kathleen Adams directly. Ms. Adams will also be the state agency's point of contact for any miscellaneous contractual issues. Once a request has been made for work in this area, Ms. Adams will work with the agency's project manager and Rob Zisette to identify the agency's primary needs and then develop a scope and budget for the project. Rob Zisette will then be the primary technical coordinator, and will perform technical oversight and review of all work.

## Section 4: Offeror Qualifications

### 4.0 State's Right to Investigate and Reject

Herrera understands and will comply.

### 4.1 Offeror Informational Requirements – All Service Categories

Herrera understands and will comply.

### 4.2 Offeror Qualification Requirements – Specific Service Categories

Herrera understands and will comply.

#### 4.1.1 References

Herrera Environmental Consultants has a history of successfully providing services to clients throughout the western United States. As an environmental science and engineering firm, Herrera combines the expertise of our scientists, engineers, and planners to provide an interdisciplinary approach to each project. This specialized approach provides our clients with a greater understanding of each of the key components in every project. In addition, attention to our client's needs and a commitment to satisfying those needs efficiently have been the key to Herrera's success in managing its past and present projects. The following projects exemplify our experience providing TMDL services to a variety of clients, as well as provide a client contact for each project that will attest to our capabilities.

#### Issaquah Highlands Master Plan Development Water Quality Studies, Issaquah, WA

*Client: Port Blakely Communities*

*Contact: Carol Beck, Port Blakely Communities, (425) 391-4700*

*Performance Period: 1992 – Present*

*Contract Amount: \$550,000*

Issaquah Highlands Comprehensive Monitoring. In cooperation with the City of Issaquah, King County, Sammamish Plateau Water and Sewer District, and Port Blakely Communities, Herrera developed the Issaquah Highlands Comprehensive Monitoring Plan. This monitoring plan, which is now being implemented by Herrera, is designed to evaluate construction and post-development impacts on surface and ground water resources of the 2,200-acre Planned Community Development located at Issaquah, Washington. Herrera's staff is conducting hydrologic studies on the site to assess the performance of stormwater retention and infiltration facilities, and to ensure the project is not adversely impacting natural surface water features. To facilitate these studies, Herrera has installed a variety of automated monitoring equipment including pressure transducers, capacitance depth probes, and doppler velocity sensors that are interfaced with data loggers. Automated probes and water samplers are also being employed to provide continuous records of turbidity at selected stream locations and to monitor the pollutant removal efficiency of stormwater treatment facilities. Herrera staff also monitor ground water levels and water quality at three onsite wells. Stream channel stability is being monitored at two onsite streams by surveying elevations at stream cross-sections. Data management, data interpretation, and reporting of all data are conducted on a regular, weekly basis including semi-annual reports that summarize all data collected.

#### Willapa River Microbial Source Tracking Study, Raymond, Pacific County, Washington

*Client: Pacific County Dept. of Community Development*

*Contact: Bryan Harrison, 360-875-9356*

*Performance Period: 8/2003 – 7/2005*

*Contract Amount: \$55,000*

Herrera developed a microbial source tracking study using a genetic fingerprinting technique to identify sources of fecal coliform bacteria in the Willapa River in Pacific County, Washington. This study was designed for implementation of the fecal coliform bacteria total maximum daily load (TMDL) developed by the Washington Department of Ecology in collaboration with the local watershed committee. Herrera prepared the sampling and analysis plan in accordance with Ecology guidelines, and trained local staff to collect fecal coliform bacteria samples and water quality data. Herrera is coordinating the collection of river water samples, and the collection of fecal waste samples from the watershed to update the bacteria DNA library with known sources from the Willapa River watershed. Herrera is coordinating the laboratory analysis of the collected bacteria cultures for isolation of pure *E. coli* strains and DNA sequencing (molecular ribotyping). Herrera will compile the bacteria enumeration and DNA matching results upon completion of one year of sampling, and will evaluate spatial, temporal, and hydrologic trends in the matching results and fecal coliform bacteria concentrations. A final project report will be prepared describing the study methods, comparing fecal coliform bacteria results to historical data, and will evaluating the fecal source matching results to assist the local committee with implementation of the fecal coliform bacteria TMDL.

#### Stormwater Microbial Source Tracking for SeaTac Airport, SeaTac, WA

*Client: Port of Seattle*

*Contact: Scott Tobiason, (206) 444-6798*

*Performance Period: 1999 – 2001*

*Contract Amount: \$60,000*

Herrera assisted the Port of Seattle with the Seattle-Tacoma International Airport Stormwater Management Program by employing a genetic fingerprinting technique to characterize sources of fecal coliform bacteria contamination in runoff to Des Moines Creek. Herrera developed the monitoring plan, collected animal and human source samples at various locations in the airport drainage basins, and coordinated stormwater sampling and analysis efforts by others. *Escherichia coli* DNA were isolated from the source and stormwater samples, and were compared to each other and to *E. coli* DNA from known fecal sources in a national database containing thousands of unique genotypes. Herrera



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#### Rob Zisette, Aquatic Science Director – Technical Lead

Mr. Zisette, Herrera's aquatic science director, has 23 years of professional experience specializing in surface water management, including water quality assessments, stormwater management plans, aquatic plant management studies, lake restoration projects, and environmental impact statements. He has developed and implemented monitoring and quality assurance project plans for various freshwater and marine water and sediment quality investigations. Mr. Zisette has evaluated nonpoint source pollution and the effects of best management practices (BMPs) in streams and urban drainage basins. He has assessed benthic invertebrate populations, fish habitat, and riparian conditions in streams. Mr. Zisette has mapped aquatic plants, evaluated aquatic plant management techniques, assessed plankton communities, identified nutrient sources, and characterized taste and odor sources in lakes and drinking water reservoirs. Additional experience includes water quality impact analysis for solid and hazardous waste management projects, dredge disposal analysis for marine sediment management projects, laboratory analysis of water samples for various chemical and biological parameters, and validation of field and laboratory data.

#### John Lenth, Senior Environmental Scientist

Mr. Lenth is a senior environmental scientist with 10 years of experience in aquatic ecology, water quality, hydrology, and watershed management. He has a broad familiarity with field and laboratory procedures for conducting water quality studies in both lakes and streams. He has implemented several long-term water quality monitoring projects designed to assess the effectiveness of best management practices in controlling nonpoint source pollution from urban and agricultural land use. Mr. Lenth's background includes experience performing biological assessments of water quality using aquatic macroinvertebrates. He has used a wide variety of sampling techniques for aquatic macroinvertebrates and is skilled in freshwater invertebrate taxonomy. Mr. Lenth also has extensive experience in data management and statistical analysis. His background in statistics includes knowledge of both univariate and multivariate techniques for examining patterns in biological and water quality data. Mr. Lenth is highly proficient at installing and monitoring field water quality instruments, having installed and programmed a wide variety of devices for the remote collection of hydrologic and water quality data. His skills also include evaluating fish habitat quality in streams, mapping of habitat features with differential GPS, implementing quality assurance and quality control protocols, and analyzing water samples for various chemical and biological parameters. He has also been active in educating community groups on issues related to water quality, watershed management, and benthic ecology.

#### Jennifer B. Goldsmith, Environmental Scientist

Ms. Goldsmith has 12 years of experience conducting natural resource assessments throughout the Pacific Northwest. Her professional expertise includes ground water and surface water quality sampling, development of water quality monitoring programs, analysis of water quality data and impact prediction, forestry, and storm water modeling. Ms. Goldsmith has extensive experience preparing water quality analysis documentation for a variety of environmental impact statements, environmental assessments, and permit applications. She has extensive knowledge of the Clean Water Act specifically the 303(d) listing procedures and the Total Maximum Daily Load (TMDL) implementation process. She has completed Washington State Watershed Analysis Level 1 and 2 Riparian Function Assessments of canopy closure and stream temperature for numerous watersheds. She is familiar with Washington State Timber/Fish/Wildlife (T/F/W) guidelines and has implemented these guidelines to assess fisheries conditions and identify resource sensitivities. In addition, Ms. Goldsmith has prepared water resource, geology and soils existing conditions and impacts from various timber management options for NEPA environmental assessments. Ms. Goldsmith was a member of the team of scientists and biologists that conducted the first habitat conservation plan (HCP) in the state of Washington.

#### Dan Bennett, Staff Environmental Scientist

Mr. Bennett is an environmental scientist with 10 years of experience in a wide variety of disciplines including water quality, aquatic ecology, soil science, erosion control, and forest and watershed management. He is familiar with a wide array of field and laboratory procedures for conducting water quality monitoring and investigations of stream and soil quality, and assessing forests for habitat and

timber resources. Mr. Bennett has implemented several water quality monitoring projects designed to assess the effectiveness of best management practices in controlling runoff from construction projects and from the use of soil amendments. He has conducted studies of biotic integrity of streams using indices of benthic-macroinvertebrate health. Mr. Bennett is versed in surveying and map-making techniques, and has designed and implemented geographic information system (GIS) projects.

#### Michael C. Cawrse, Environmental Scientist

Mr. Cawrse is an environmental scientist with over 5 years of experience in water quality, aquatic ecology, and wetland delineation. He is familiar with field and laboratory procedures for conducting water quality studies of streams and lakes. He has implemented several long term monitoring studies designed to assess land use impacts on water quality and riparian habitat. Mr. Cawrse has additional experience with data management and statistical analysis. Other skills include wetland delineation, aquatic and riparian plant identification, aquatic macroinvertebrate identification, and the analysis of water samples for various chemical and biological parameters. He also has experience with toxicity testing of fresh and salt water. Mr. Cawrse has also administered several lake management and marine resource citizen advisory committees.

#### Alex Svendsen, Staff Environmental Scientist

Alex Svendsen is an environmental scientist with experience in water quality, hazardous waste remediation, and environmental restoration. He has implemented and analyzed best management practices and erosion control measures for numerous construction projects. His remediation experience includes utilizing residual-based soil amendments to neutralize acidic/heavy metal contaminated mine tailings. His familiarity with cutting edge in-situ remediation techniques promotes cost-effective means of remediating heavy metal contaminated soils to EPA Superfund specifications. Mr. Svendsen has experience restoring native vegetation on devastated lands using organic amendments. In addition, he has a broad knowledge of a variety of field and laboratory procedures used for monitoring and investigating streams, wetlands, lakes, and soils.

#### Mark Ewbank, P.E., Principal Engineer

Mark Ewbank, Principal Engineer and Herrera's Director of Surface Water Engineering, has 17 years of experience in water quality, water pollution control, stormwater management, stream restoration, and related hydrologic and hydraulic analyses. Mr. Ewbank has conducted numerous assessments of hydrologic conditions in natural and developed environments and is thoroughly familiar with the development of stormwater treatment and detention system designs, as well as applications of source control best management practices for the protection of surface and ground water. He has conducted analyses of the effects of various pollutants on streams, lakes, wetlands, and estuaries, and analyzed alternative strategies for effectiveness in controlling surface water pollution. He has developed estimates of potential soil erosion from construction projects and prepared erosion and sediment control plans and designs. Mr. Ewbank has contributed to the design of several stream restoration projects, and managed Herrera's multi-disciplinary design teams on some of those projects. Mr. Ewbank has experience in developing water quality monitoring programs to assess existing conditions and in designing stormwater control facilities for residential, commercial, and industrial land uses. In addition, Mr. Ewbank has experience in developing supporting information for NPDES permit applications and compliance documents and all components of Stormwater Pollution Prevention Plans (SWPPP). Mr. Ewbank has also determined impacts of forest harvesting practices on runoff processes and related impacts on streams and instream habitat. Mr. Ewbank has the ability to direct multidisciplinary work efforts involving diverse tasks and budgets on a variety of environmental engineering projects.

#### 4.1.3 Method of Providing Services and Quality Assurance

Herrera uses a two-tiered product review system to ensure high quality and accuracy of all work. Under the first tier, the project manager will provide initial review, and has major responsibility for developing technical and design reports that are accurate and thorough (including performance of fieldwork). The principal-in-charge, will provide second-tier review and holds ultimate responsibility for the technical integrity of work performed by our staff. This final review and approval of all work

products is the last step in a series of checks and balances that ensures refinement and review of work as it progresses. No draft documents will be issued to the State until Herrera's review process has occurred. These well-established review procedures enhance Herrera's ability to meet the State's needs throughout the duration of this contract and ensure that all work products are of the highest quality.

Herrera has recent experience that demonstrates our capabilities and methods of providing TMDL-related services. A specific example that conveys this experience in TMDLs is the Willapa River Microbial Source Tracking Study. The project is scheduled to be completed on time and within budget. This example project illustrates the methodology used by Herrera staff in gathering and analyzing water quality data for TMDL studies.

Herrera developed a microbial source tracking study to identify sources of fecal coliform bacteria in the Willapa River for implementation of the fecal coliform bacteria TMDL by Pacific County, Washington. Herrera staff members prepared the sampling and analysis plan and trained local staff to collect fecal coliform bacteria samples and water quality data. The Institute of Environmental Health was contracted to conduct the laboratory molecular ribotyping studies to identify specific sources of fecal coliform bacteria. A final project report will be prepared that will describe the study methods, compare fecal coliform bacteria results to historical data and will evaluate the fecal source matching results as a function of hydrology, season, and location in the watershed.

A Quality Assurance Project Plan has been included with this submittal to demonstrate Herrera's quality assurance procedures for this project.



#### 4.1.4 Staff Qualifications

Herrera's key team members provided in Table 1 are available and qualified to provide water quality services to the State of Montana. As indicated, each individual is fully trained and experienced in the environmental or engineering discipline they have provided technical writing documents for.

**Table 1. Herrera Team Members' Qualifications**

<b>Team Members</b>	<b>Overall Years of Experience</b>	<b>Years on Similar Projects</b>	<b>Degrees</b>	<b>Professional Registrations and Relevant Training</b>
Kathleen Adams	11	11	M.S. in Natural Resources, University of Wisconsin-Stevens Point, 1997 B.S. in Wildlife Management, University of New Hampshire, 1991	Implementing the National Environmental Policy Act on Federal Lands, Duke University, 2000
Rob Zisette	23	23	M.S. in Water Resource Management, University of Washington, 1980 B.S. in Environmental Biology, University of Calgary, 1978	OSHA 40-Hour Health and Safety Training for Hazardous Waste Sites, since 1988 Scuba Diving Certification, 1979
John Lenth	10	10	M.S. in Environmental Science, Huxley College, Western Washington University, 1995 B.A. in English, Seattle University, 1988	OSHA 40-Hour health and safety training for hazardous waste sites, 1997 WSDOT Certification as an Erosion and Spill Control Lead, 1997 6-Hour Confined Space Entry Training, 1998 WSDOT Biological Assessment Workshop; 1998
Jennifer Goldsmith	12	12	M.E.M. in Water Resources, Duke University, 1990 B.S. in Geology, Western Washington University, 1986	Watershed Analysis Analyst/Specialist-Hydrology, Riparian, and Public Works Modules, Washington Department of Natural Resources
Dan Bennett	10	10	M.S. Soils Science, University of Washington, 1999 B.S. Forestry and Resource Management, University of California at Berkeley, 1992	6-Hour Confined Space Entry Training, 2001 40-Hour HAZWOP Training, 2002
Michael Cawrse	9	9	M.S. in Environmental Science (Aquatic Ecology), Western Washington University, 1998 B.S. in Microbiology (Molecular Biology), University of Washington, 1989	Wetland Science and Management Certificate, University of Washington, 2001
Alex Svendsen	7	7	M.S. in Soils Science, University of Washington, 2002 B.S. in Geography, University of Utah, 1998	OSHA 40-Hour HAZWOPER Certification and Training, 2003 OSHA 4-Hour Confined Space Entry Certification and Training, 2003 US EPA OSC/START Training, Region 10, 2003
Mark Ewbank, PE	17	17	M.S. in Civil/Environmental Engineering, University of Washington, 1992 B.S. in Civil Engineering, University of Illinois, 1985	Professional Engineer #29434: Washington, 1992



## Project Manager and Key Technical Staff

Kathleen Adams, head of Herrera's Missoula Montana office, will be the project manager and primary point of contact for work orders resulting from this contract. Ms. Adams is a senior natural resources scientist with over 11 years of experience in water quality, wetlands, plant ecology and wildlife. She has successfully managed several projects in Montana including the Flathead Agency Irrigation Project Programmatic Biological Assessment for the Bureau of Indian Affairs. Ms. Adams will provide contract administration. Mark Ewbank, P.E. will serve as principal-in-charge and provide quality assurance for this contract. Mr. Ewbank has over 17 years of experience with surface water management including water quality studies and stormwater management to meet regulatory requirements such as TMDLs.

Rob Zisette, Herrera's Aquatic Science Director, will be the lead technical coordinator for the TMDL work orders resulting from this contract. Mr. Zisette has 23 years of professional experience in surface water management and environmental studies. He specializes in preparing water quality monitoring plans, stormwater management plans, watershed management plans, and lake management plans, and conducting water quality assessments, pollutant source tracking investigations, BMP evaluations, TMDL studies, sediment management investigations, aquatic plant management studies, lake diagnostic studies, and lake restoration projects.

Supporting Rob for the TMDL work on this contract will be John Lenth, Jennifer Goldsmith, Dan Bennett, Mike Cawrse, and Alex Svendsen. Mr. Lenth is a senior environmental scientist with 10 years of experience in aquatic ecology, water quality, hydrology, and watershed management. He has developed a number of statistical models for quantify pollutant loading rates in aquatic systems and is proficient with commercially available software for performing mixing zone analyses. Ms. Goldsmith is a project scientist with 12 years of experience conducting water quality assessments and has extensive experience with water quality regulations including TMDLs. Mr. Bennett, Mr. Cawrse and Mr. Svendsen are scientists with a combined 26 years of experience in developing and implementing water quality monitoring plans and interpreting water quality monitoring data.

Any agency using this contract to procure TMDL services can contact Kathleen Adams directly. Ms. Adams will also be the state agency's point of contact for any miscellaneous contractual issues. Once a request has been made for work in this area, Ms. Adams will work with the agency's project manager and Rob Zisette to identify the agency's primary needs and then develop a scope and budget for the project. Rob Zisette will then be the primary technical coordinator, and will perform technical oversight and review of all work.

## Section 4: Offeror Qualifications

### 4.0 State's Right to Investigate and Reject

Herrera understands and will comply.

### 4.1 Offeror Informational Requirements – All Service Categories

Herrera understands and will comply.

### 4.2 Offeror Qualification Requirements – Specific Service Categories

Herrera understands and will comply.

#### 4.1.1 References

Herrera Environmental Consultants has a history of successfully providing services to clients throughout the western United States. As an environmental science and engineering firm, Herrera combines the expertise of our scientists, engineers, and planners to provide an interdisciplinary approach to each project. This specialized approach provides our clients with a greater understanding of each of the key components in every project. In addition, attention to our client's needs and a commitment to satisfying those needs efficiently have been the key to Herrera's success in managing its past and present projects. The following projects exemplify our experience providing TMDL services to a variety of clients, as well as provide a client contact for each project that will attest to our capabilities.

#### Issaquah Highlands Master Plan Development Water Quality Studies, Issaquah, WA

*Client: Port Blakely Communities*

*Contact: Carol Beck, Port Blakely Communities, (425) 391-4700*

*Performance Period: 1992 – Present*

*Contract Amount: \$550,000*

Issaquah Highlands Comprehensive Monitoring. In cooperation with the City of Issaquah, King County, Sammamish Plateau Water and Sewer District, and Port Blakely Communities, Herrera developed the Issaquah Highlands Comprehensive Monitoring Plan. This monitoring plan, which is now being implemented by Herrera, is designed to evaluate construction and post-development impacts on surface and ground water resources of the 2,200-acre Planned Community Development located at Issaquah, Washington. Herrera's staff is conducting hydrologic studies on the site to assess the performance of stormwater retention and infiltration facilities, and to ensure the project is not adversely impacting natural surface water features. To facilitate these studies, Herrera has installed a variety of automated monitoring equipment including pressure transducers, capacitance depth probes, and doppler velocity sensors that are interfaced with data loggers. Automated probes and water samplers are also being employed to provide continuous records of turbidity at selected stream locations and to monitor the pollutant removal efficiency of stormwater treatment facilities. Herrera staff also monitor ground water levels and water quality at three onsite wells. Stream channel stability is being monitored at two onsite streams by surveying elevations at stream cross-sections. Data management, data interpretation, and reporting of all data are conducted on a regular, weekly basis including semi-annual reports that summarize all data collected.

#### Willapa River Microbial Source Tracking Study, Raymond, Pacific County, Washington

*Client: Pacific County Dept. of Community Development*

*Contact: Bryan Harrison, 360-875-9356*

*Performance Period: 8/2003 – 7/2005*

*Contract Amount: \$55,000*

Herrera developed a microbial source tracking study using a genetic fingerprinting technique to identify sources of fecal coliform bacteria in the Willapa River in Pacific County, Washington. This study was designed for implementation of the fecal coliform bacteria total maximum daily load (TMDL) developed by the Washington Department of Ecology in collaboration with the local watershed committee. Herrera prepared the sampling and analysis plan in accordance with Ecology guidelines, and trained local staff to collect fecal coliform bacteria samples and water quality data. Herrera is coordinating the collection of river water samples, and the collection of fecal waste samples from the watershed to update the bacteria DNA library with known sources from the Willapa River watershed. Herrera is coordinating the laboratory analysis of the collected bacteria cultures for isolation of pure *E. coli* strains and DNA sequencing (molecular ribotyping). Herrera will compile the bacteria enumeration and DNA matching results upon completion of one year of sampling, and will evaluate spatial, temporal, and hydrologic trends in the matching results and fecal coliform bacteria concentrations. A final project report will be prepared describing the study methods, comparing fecal coliform bacteria results to historical data, and will evaluating the fecal source matching results to assist the local committee with implementation of the fecal coliform bacteria TMDL.

#### Stormwater Microbial Source Tracking for SeaTac Airport, SeaTac, WA

*Client: Port of Seattle*

*Contact: Scott Tobiason, (206) 444-6798*

*Performance Period: 1999 – 2001*

*Contract Amount: \$60,000*

Herrera assisted the Port of Seattle with the Seattle-Tacoma International Airport Stormwater Management Program by employing a genetic fingerprinting technique to characterize sources of fecal coliform bacteria contamination in runoff to Des Moines Creek. Herrera developed the monitoring plan, collected animal and human source samples at various locations in the airport drainage basins, and coordinated stormwater sampling and analysis efforts by others. *Escherichia coli* DNA were isolated from the source and stormwater samples, and were compared to each other and to *E. coli* DNA from known fecal sources in a national database containing thousands of unique genotypes. Herrera

prepared a comprehensive report of the study findings. The matching results identified birds as the predominant fecal source at the airport, while human sources were also present. The Port of Seattle used these findings to develop additional source control actions that included removal of pigeon habitat and modification of aircraft wastewater handling procedures.

#### Green-Duwamish Watershed Water Quality Assessment, Seattle, Washington

*Client: King County DNRP / WLRD*

*Contact: Douglas Henderson, Project Manager, (206) 263-6317*

*Performance Period: 2003 – Present*

*Contract Amount: \$400,000*

Herrera is currently providing water quality, hydrology, land use, and biological data evaluation services to King County for the Green-Duwamish Watershed Water Quality Assessment. These services include preparation of two water quality data reports, a water quality pollutant loadings report, two benthic macroinvertebrate reports, and a microbial source tracking report. For the first water quality data report, Herrera has compiled and analyzed an extensive set of water quality and hydrologic monitoring data collected in 2001 and 2002 for 18 monitoring sites in the 264 square mile Green-Duwamish watershed (WRIA 9). Herrera will compile and evaluate data collected in 2003 for the second water quality data report. Hydrologic data analysis conducted for these water quality data reports includes the development of algorithms for separating base and storm flow portions of the hydrographs over the three year study period. The water quality loadings report will include calculations of loadings for each water quality parameter using discharge data for the monitored basins, estimates of loading factors for land use categories using the data collected, and detailed statistical analyses for evaluating potential relationships between pollutant concentrations and various environmental conditions. Herrera is also coordinating the preparation of two benthic macroinvertebrate reports that will evaluate data collected in 2002 and 2003 for approximately 200 sites in the Green-Duwamish watershed and the Cedar-Sammamish-Washington watershed (WRIA 8). These reports will assess habitat conditions in these watersheds based on the Benthic Index of Biotic Integrity (B-IBI) scores that are calculated from the benthic invertebrate data, and will evaluate relationships between the B-IBI scores and various water quality, hydrology, land use, and fish habitat conditions. Using information from the analyses described above, Herrera will make recommendations to King County for a long-term monitoring program in the Green-Duwamish watershed. Finally, Herrera will prepare a microbial source tracking report that evaluates genetic fingerprinting data collected for *E. coli* bacteria that have been isolated from water samples collected within the watershed.

#### Freeland Outfall Water Quality Improvement, Freeland, Island County, Washington

*Client: Island County Public Works Department*

*Contact: Phil Cohen, 360.679.7331 ext. 7440*

*Performance Period: 2002 – 2004*

*Contract Amount: \$91,500*

Herrera developed and implemented a quality assurance project plan (QAPP) to characterize water quality in Freeland, WA for Island County Public Works. The QAPP was prepared in accordance with the Centennial Clean Water Fund grant agreement and guidelines published by the Washington Department of Ecology. As part of this monitoring effort, three base flow and eight storm flow samples were collected at four locations within the Freeland drainage basin. Monitoring locations for the study were carefully selected to evaluate pollutant loads from specific land use categories (e.g., urban, residential, and rural), and to evaluate the treatment effectiveness of a stream/wetland system. Data obtained from these monitoring stations is being used to identify the primary sources of water quality impairment within the Freeland drainage basin. In addition, Herrera documented fish habitat conditions in the stream/wetland system using King County Level I stream habitat inventory protocols. Herrera also documented habitat conditions in a tidally-influenced section of the stream/wetland system using the Estuarine Habitat Assessment Protocol that was developed for the Puget Sound Estuary Program. Based on this information, Herrera will make preliminary recommendations to the Island County Public Works for water quality treatment options to address any observed problems.

#### 4.1.2 Company Profile and Experience

Herrera Environmental Consultants, Inc. (Herrera) has been providing a diverse range of civil / environmental engineering, environmental science, and planning services to clients throughout the western United States, since 1980. Herrera offers expertise in most aspects of environmental science and engineering services, including environmental and regulatory compliance, permitting, and restoration and mitigation, with additional expertise in public policy development, environmental training, and technical publications, as well as project planning, design, and storm water and drainage design services.

Herrera's Montana branch office, and main office for Montana-related services, is located in Missoula. During the last four years, Herrera has established this Montana office that staffed by long-time Montana residents, who have gained professional experience in Montana and surrounding areas. In addition to our Montana staff, a high level of focused expertise in environmental science, engineering, permitting, planning and public involvement is available from Herrera's Seattle and Portland offices.

Herrera has developed management strategies for water quality improvement and protection of aquatic habitats for over 20 years. Herrera has conducted water quality and sediment investigations for numerous lakes, streams, rivers, and wetlands located throughout the western states. Our expertise encompasses successful planning, implementation, and design strategies that have been applied to projects throughout the west for clients that include federal, state, and local agencies, as well as private sector clients. Our staff members are thoroughly familiar with the surface water and drinking water regulations and standards established by U.S. EPA and various state agencies. Herrera scientists have identified pollutant sources and targets, assessed and allocated pollutant source loads, and determined total maximum daily loads (TMDLs) based on established water quality criteria for receiving waters on 303(d) lists. We have conducted comprehensive water quality monitoring and habitat surveys of water bodies in urban, agricultural, and forested watersheds for the assessment of pollutant sources, impacts, and loads. Herrera staff have used various sampling techniques that include ultra-clean technique for low levels of pollutants, continuous long-term monitoring of multiple field parameters, automatic samplers for collection of stormwater samples, and rapid bioassessment protocols for assessing periphyton and macroinvertebrate communities. Herrera employs various analytical techniques to characterize pollutant sources including the identification of hydrocarbon compounds and sources, and genetic fingerprinting of fecal coliform bacteria. For several fecal coliform bacteria TMDL projects, Herrera has used the state-of-the-art ribotyping method, developed by Dr. Mansour Samadpour of the University of Washington Department of Environmental Health, to identify specific human and animal sources of *E. coli* bacteria isolated from receiving waters. The *E. coli* DNA library used for this method has greatly expanded to include bacteria sources from throughout the United States, such that 95 percent of the receiving water isolates matched known sources for a recent study conducted by Herrera that did not include collection of new source bacteria from the study watershed.

The following individuals are experienced in TMDL and water quality assessment services. Resumes further detailing this experience follow these brief summaries.

##### **Kathleen Adams, Senior Natural Resource Scientist / Wildlife Biologist – Project Manager**

Ms. Adams, a senior natural resource scientist and head of Herrera's Missoula, Montana office, has experience in wildlife, wetland, and plant ecology. Her consulting expertise includes identifying and describing sensitive areas and upland vegetative communities, and evaluating wildlife and fisheries habitat and use for NEPA/SEPA compliance, Endangered Species Act compliance, and environmental permitting. Ms. Adams has conducted and prepared biological assessments for construction projects for state transportation agencies in Washington and Montana, and for the Federal Highway Administration. Ms. Adams has also facilitated agreement between regulatory and proponent agencies on wetland mitigation for high impact projects. She has a wide range of field experience including upland and wetland plant identification and sampling, rare plant surveys, songbird point counts, waterfowl surveys, small mammal and herpetological surveys, wetland delineations, and stream surveys.



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products is the last step in a series of checks and balances that ensures refinement and review of work as it progresses. No draft documents will be issued to the State until Herrera's review process has occurred. These well-established review procedures enhance Herrera's ability to meet the State's needs throughout the duration of this contract and ensure that all work products are of the highest quality.

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A Quality Assurance Project Plan has been included with this submittal to demonstrate Herrera's quality assurance procedures for this project.

#### 4.1.4 Staff Qualifications

Herrera's key team members provided in Table 1 are available and qualified to provide water quality services to the State of Montana. As indicated, each individual is fully trained and experienced in the environmental or engineering discipline they have provided technical writing documents for.

**Table 1. Herrera Team Members' Qualifications**

<b>Team Members</b>	<b>Overall Years of Experience</b>	<b>Years on Similar Projects</b>	<b>Degrees</b>	<b>Professional Registrations and Relevant Training</b>
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## Section 4: Offeror Qualifications

### 4.0 State's Right to Investigate and Reject

Herrera understands and will comply.

### 4.1 Offeror Informational Requirements – All Service Categories

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*Client: Port Blakely Communities*

*Contact: Carol Beck, Port Blakely Communities, (425) 391-4700*

*Performance Period: 1992 – Present*

*Contract Amount: \$550,000*

Issaquah Highlands Comprehensive Monitoring. In cooperation with the City of Issaquah, King County, Sammamish Plateau Water and Sewer District, and Port Blakely Communities, Herrera developed the Issaquah Highlands Comprehensive Monitoring Plan. This monitoring plan, which is now being implemented by Herrera, is designed to evaluate construction and post-development impacts on surface and ground water resources of the 2,200-acre Planned Community Development located at Issaquah, Washington. Herrera's staff is conducting hydrologic studies on the site to assess the performance of stormwater retention and infiltration facilities, and to ensure the project is not adversely impacting natural surface water features. To facilitate these studies, Herrera has installed a variety of automated monitoring equipment including pressure transducers, capacitance depth probes, and doppler velocity sensors that are interfaced with data loggers. Automated probes and water samplers are also being employed to provide continuous records of turbidity at selected stream locations and to monitor the pollutant removal efficiency of stormwater treatment facilities. Herrera staff also monitor ground water levels and water quality at three onsite wells. Stream channel stability is being monitored at two onsite streams by surveying elevations at stream cross-sections. Data management, data interpretation, and reporting of all data are conducted on a regular, weekly basis including semi-annual reports that summarize all data collected.

#### Willapa River Microbial Source Tracking Study, Raymond, Pacific County, Washington

*Client: Pacific County Dept. of Community Development*

*Contact: Bryan Harrison, 360-875-9356*

*Performance Period: 8/2003 – 7/2005*

*Contract Amount: \$55,000*

Herrera developed a microbial source tracking study using a genetic fingerprinting technique to identify sources of fecal coliform bacteria in the Willapa River in Pacific County, Washington. This study was designed for implementation of the fecal coliform bacteria total maximum daily load (TMDL) developed by the Washington Department of Ecology in collaboration with the local watershed committee. Herrera prepared the sampling and analysis plan in accordance with Ecology guidelines, and trained local staff to collect fecal coliform bacteria samples and water quality data. Herrera is coordinating the collection of river water samples, and the collection of fecal waste samples from the watershed to update the bacteria DNA library with known sources from the Willapa River watershed. Herrera is coordinating the laboratory analysis of the collected bacteria cultures for isolation of pure *E. coli* strains and DNA sequencing (molecular ribotyping). Herrera will compile the bacteria enumeration and DNA matching results upon completion of one year of sampling, and will evaluate spatial, temporal, and hydrologic trends in the matching results and fecal coliform bacteria concentrations. A final project report will be prepared describing the study methods, comparing fecal coliform bacteria results to historical data, and will evaluating the fecal source matching results to assist the local committee with implementation of the fecal coliform bacteria TMDL.

#### Stormwater Microbial Source Tracking for SeaTac Airport, SeaTac, WA

*Client: Port of Seattle*

*Contact: Scott Tobiason, (206) 444-6798*

*Performance Period: 1999 – 2001*

*Contract Amount: \$60,000*

Herrera assisted the Port of Seattle with the Seattle-Tacoma International Airport Stormwater Management Program by employing a genetic fingerprinting technique to characterize sources of fecal coliform bacteria contamination in runoff to Des Moines Creek. Herrera developed the monitoring plan, collected animal and human source samples at various locations in the airport drainage basins, and coordinated stormwater sampling and analysis efforts by others. *Escherichia coli* DNA were isolated from the source and stormwater samples, and were compared to each other and to *E. coli* DNA from known fecal sources in a national database containing thousands of unique genotypes. Herrera

prepared a comprehensive report of the study findings. The matching results identified birds as the predominant fecal source at the airport, while human sources were also present. The Port of Seattle used these findings to develop additional source control actions that included removal of pigeon habitat and modification of aircraft wastewater handling procedures.

#### Green-Duwamish Watershed Water Quality Assessment, Seattle, Washington

*Client: King County DNRP / WLRD*

*Contact: Douglas Henderson, Project Manager, (206) 263-6317*

*Performance Period: 2003 – Present*

*Contract Amount: \$400,000*

Herrera is currently providing water quality, hydrology, land use, and biological data evaluation services to King County for the Green-Duwamish Watershed Water Quality Assessment. These services include preparation of two water quality data reports, a water quality pollutant loadings report, two benthic macroinvertebrate reports, and a microbial source tracking report. For the first water quality data report, Herrera has compiled and analyzed an extensive set of water quality and hydrologic monitoring data collected in 2001 and 2002 for 18 monitoring sites in the 264 square mile Green-Duwamish watershed (WRIA 9). Herrera will compile and evaluate data collected in 2003 for the second water quality data report. Hydrologic data analysis conducted for these water quality data reports includes the development of algorithms for separating base and storm flow portions of the hydrographs over the three year study period. The water quality loadings report will include calculations of loadings for each water quality parameter using discharge data for the monitored basins, estimates of loading factors for land use categories using the data collected, and detailed statistical analyses for evaluating potential relationships between pollutant concentrations and various environmental conditions. Herrera is also coordinating the preparation of two benthic macroinvertebrate reports that will evaluate data collected in 2002 and 2003 for approximately 200 sites in the Green-Duwamish watershed and the Cedar-Sammamish-Washington watershed (WRIA 8). These reports will assess habitat conditions in these watersheds based on the Benthic Index of Biotic Integrity (B-IBI) scores that are calculated from the benthic invertebrate data, and will evaluate relationships between the B-IBI scores and various water quality, hydrology, land use, and fish habitat conditions. Using information from the analyses described above, Herrera will make recommendations to King County for a long-term monitoring program in the Green-Duwamish watershed. Finally, Herrera will prepare a microbial source tracking report that evaluates genetic fingerprinting data collected for *E. coli* bacteria that have been isolated from water samples collected within the watershed.

#### Freeland Outfall Water Quality Improvement, Freeland, Island County, Washington

*Client: Island County Public Works Department*

*Contact: Phil Cohen, 360.679.7331 ext. 7440*

*Performance Period: 2002 – 2004*

*Contract Amount: \$91,500*

Herrera developed and implemented a quality assurance project plan (QAPP) to characterize water quality in Freeland, WA for Island County Public Works. The QAPP was prepared in accordance with the Centennial Clean Water Fund grant agreement and guidelines published by the Washington Department of Ecology. As part of this monitoring effort, three base flow and eight storm flow samples were collected at four locations within the Freeland drainage basin. Monitoring locations for the study were carefully selected to evaluate pollutant loads from specific land use categories (e.g., urban, residential, and rural), and to evaluate the treatment effectiveness of a stream/wetland system. Data obtained from these monitoring stations is being used to identify the primary sources of water quality impairment within the Freeland drainage basin. In addition, Herrera documented fish habitat conditions in the stream/wetland system using King County Level I stream habitat inventory protocols. Herrera also documented habitat conditions in a tidally-influenced section of the stream/wetland system using the Estuarine Habitat Assessment Protocol that was developed for the Puget Sound Estuary Program. Based on this information, Herrera will make preliminary recommendations to the Island County Public Works for water quality treatment options to address any observed problems.

#### 4.1.2 Company Profile and Experience

Herrera Environmental Consultants, Inc. (Herrera) has been providing a diverse range of civil / environmental engineering, environmental science, and planning services to clients throughout the western United States, since 1980. Herrera offers expertise in most aspects of environmental science and engineering services, including environmental and regulatory compliance, permitting, and restoration and mitigation, with additional expertise in public policy development, environmental training, and technical publications, as well as project planning, design, and storm water and drainage design services.

Herrera's Montana branch office, and main office for Montana-related services, is located in Missoula. During the last four years, Herrera has established this Montana office that staffed by long-time Montana residents, who have gained professional experience in Montana and surrounding areas. In addition to our Montana staff, a high level of focused expertise in environmental science, engineering, permitting, planning and public involvement is available from Herrera's Seattle and Portland offices.

Herrera has developed management strategies for water quality improvement and protection of aquatic habitats for over 20 years. Herrera has conducted water quality and sediment investigations for numerous lakes, streams, rivers, and wetlands located throughout the western states. Our expertise encompasses successful planning, implementation, and design strategies that have been applied to projects throughout the west for clients that include federal, state, and local agencies, as well as private sector clients. Our staff members are thoroughly familiar with the surface water and drinking water regulations and standards established by U.S. EPA and various state agencies. Herrera scientists have identified pollutant sources and targets, assessed and allocated pollutant source loads, and determined total maximum daily loads (TMDLs) based on established water quality criteria for receiving waters on 303(d) lists. We have conducted comprehensive water quality monitoring and habitat surveys of water bodies in urban, agricultural, and forested watersheds for the assessment of pollutant sources, impacts, and loads. Herrera staff have used various sampling techniques that include ultra-clean technique for low levels of pollutants, continuous long-term monitoring of multiple field parameters, automatic samplers for collection of stormwater samples, and rapid bioassessment protocols for assessing periphyton and macroinvertebrate communities. Herrera employs various analytical techniques to characterize pollutant sources including the identification of hydrocarbon compounds and sources, and genetic fingerprinting of fecal coliform bacteria. For several fecal coliform bacteria TMDL projects, Herrera has used the state-of-the-art ribotyping method, developed by Dr. Mansour Samadpour of the University of Washington Department of Environmental Health, to identify specific human and animal sources of *E. coli* bacteria isolated from receiving waters. The *E. coli* DNA library used for this method has greatly expanded to include bacteria sources from throughout the United States, such that 95 percent of the receiving water isolates matched known sources for a recent study conducted by Herrera that did not include collection of new source bacteria from the study watershed.

The following individuals are experienced in TMDL and water quality assessment services. Resumes further detailing this experience follow these brief summaries.

##### **Kathleen Adams, Senior Natural Resource Scientist / Wildlife Biologist – Project Manager**

Ms. Adams, a senior natural resource scientist and head of Herrera's Missoula, Montana office, has experience in wildlife, wetland, and plant ecology. Her consulting expertise includes identifying and describing sensitive areas and upland vegetative communities, and evaluating wildlife and fisheries habitat and use for NEPA/SEPA compliance, Endangered Species Act compliance, and environmental permitting. Ms. Adams has conducted and prepared biological assessments for construction projects for state transportation agencies in Washington and Montana, and for the Federal Highway Administration. Ms. Adams has also facilitated agreement between regulatory and proponent agencies on wetland mitigation for high impact projects. She has a wide range of field experience including upland and wetland plant identification and sampling, rare plant surveys, songbird point counts, waterfowl surveys, small mammal and herpetological surveys, wetland delineations, and stream surveys.



#### Rob Zisette, Aquatic Science Director – Technical Lead

Mr. Zisette, Herrera's aquatic science director, has 23 years of professional experience specializing in surface water management, including water quality assessments, stormwater management plans, aquatic plant management studies, lake restoration projects, and environmental impact statements. He has developed and implemented monitoring and quality assurance project plans for various freshwater and marine water and sediment quality investigations. Mr. Zisette has evaluated nonpoint source pollution and the effects of best management practices (BMPs) in streams and urban drainage basins. He has assessed benthic invertebrate populations, fish habitat, and riparian conditions in streams. Mr. Zisette has mapped aquatic plants, evaluated aquatic plant management techniques, assessed plankton communities, identified nutrient sources, and characterized taste and odor sources in lakes and drinking water reservoirs. Additional experience includes water quality impact analysis for solid and hazardous waste management projects, dredge disposal analysis for marine sediment management projects, laboratory analysis of water samples for various chemical and biological parameters, and validation of field and laboratory data.

#### John Lenth, Senior Environmental Scientist

Mr. Lenth is a senior environmental scientist with 10 years of experience in aquatic ecology, water quality, hydrology, and watershed management. He has a broad familiarity with field and laboratory procedures for conducting water quality studies in both lakes and streams. He has implemented several long-term water quality monitoring projects designed to assess the effectiveness of best management practices in controlling nonpoint source pollution from urban and agricultural land use. Mr. Lenth's background includes experience performing biological assessments of water quality using aquatic macroinvertebrates. He has used a wide variety of sampling techniques for aquatic macroinvertebrates and is skilled in freshwater invertebrate taxonomy. Mr. Lenth also has extensive experience in data management and statistical analysis. His background in statistics includes knowledge of both univariate and multivariate techniques for examining patterns in biological and water quality data. Mr. Lenth is highly proficient at installing and monitoring field water quality instruments, having installed and programmed a wide variety of devices for the remote collection of hydrologic and water quality data. His skills also include evaluating fish habitat quality in streams, mapping of habitat features with differential GPS, implementing quality assurance and quality control protocols, and analyzing water samples for various chemical and biological parameters. He has also been active in educating community groups on issues related to water quality, watershed management, and benthic ecology.

#### Jennifer B. Goldsmith, Environmental Scientist

Ms. Goldsmith has 12 years of experience conducting natural resource assessments throughout the Pacific Northwest. Her professional expertise includes ground water and surface water quality sampling, development of water quality monitoring programs, analysis of water quality data and impact prediction, forestry, and storm water modeling. Ms. Goldsmith has extensive experience preparing water quality analysis documentation for a variety of environmental impact statements, environmental assessments, and permit applications. She has extensive knowledge of the Clean Water Act specifically the 303(d) listing procedures and the Total Maximum Daily Load (TMDL) implementation process. She has completed Washington State Watershed Analysis Level 1 and 2 Riparian Function Assessments of canopy closure and stream temperature for numerous watersheds. She is familiar with Washington State Timber/Fish/Wildlife (T/F/W) guidelines and has implemented these guidelines to assess fisheries conditions and identify resource sensitivities. In addition, Ms. Goldsmith has prepared water resource, geology and soils existing conditions and impacts from various timber management options for NEPA environmental assessments. Ms. Goldsmith was a member of the team of scientists and biologists that conducted the first habitat conservation plan (HCP) in the state of Washington.

#### Dan Bennett, Staff Environmental Scientist

Mr. Bennett is an environmental scientist with 10 years of experience in a wide variety of disciplines including water quality, aquatic ecology, soil science, erosion control, and forest and watershed management. He is familiar with a wide array of field and laboratory procedures for conducting water quality monitoring and investigations of stream and soil quality, and assessing forests for habitat and

timber resources. Mr. Bennett has implemented several water quality monitoring projects designed to assess the effectiveness of best management practices in controlling runoff from construction projects and from the use of soil amendments. He has conducted studies of biotic integrity of streams using indices of benthic-macroinvertebrate health. Mr. Bennett is versed in surveying and map-making techniques, and has designed and implemented geographic information system (GIS) projects.

#### Michael C. Cawrse, Environmental Scientist

Mr. Cawrse is an environmental scientist with over 5 years of experience in water quality, aquatic ecology, and wetland delineation. He is familiar with field and laboratory procedures for conducting water quality studies of streams and lakes. He has implemented several long term monitoring studies designed to assess land use impacts on water quality and riparian habitat. Mr. Cawrse has additional experience with data management and statistical analysis. Other skills include wetland delineation, aquatic and riparian plant identification, aquatic macroinvertebrate identification, and the analysis of water samples for various chemical and biological parameters. He also has experience with toxicity testing of fresh and salt water. Mr. Cawrse has also administered several lake management and marine resource citizen advisory committees.

#### Alex Svendsen, Staff Environmental Scientist

Alex Svendsen is an environmental scientist with experience in water quality, hazardous waste remediation, and environmental restoration. He has implemented and analyzed best management practices and erosion control measures for numerous construction projects. His remediation experience includes utilizing residual-based soil amendments to neutralize acidic/heavy metal contaminated mine tailings. His familiarity with cutting edge in-situ remediation techniques promotes cost-effective means of remediating heavy metal contaminated soils to EPA Superfund specifications. Mr. Svendsen has experience restoring native vegetation on devastated lands using organic amendments. In addition, he has a broad knowledge of a variety of field and laboratory procedures used for monitoring and investigating streams, wetlands, lakes, and soils.

#### Mark Ewbank, P.E., Principal Engineer

Mark Ewbank, Principal Engineer and Herrera's Director of Surface Water Engineering, has 17 years of experience in water quality, water pollution control, stormwater management, stream restoration, and related hydrologic and hydraulic analyses. Mr. Ewbank has conducted numerous assessments of hydrologic conditions in natural and developed environments and is thoroughly familiar with the development of stormwater treatment and detention system designs, as well as applications of source control best management practices for the protection of surface and ground water. He has conducted analyses of the effects of various pollutants on streams, lakes, wetlands, and estuaries, and analyzed alternative strategies for effectiveness in controlling surface water pollution. He has developed estimates of potential soil erosion from construction projects and prepared erosion and sediment control plans and designs. Mr. Ewbank has contributed to the design of several stream restoration projects, and managed Herrera's multi-disciplinary design teams on some of those projects. Mr. Ewbank has experience in developing water quality monitoring programs to assess existing conditions and in designing stormwater control facilities for residential, commercial, and industrial land uses. In addition, Mr. Ewbank has experience in developing supporting information for NPDES permit applications and compliance documents and all components of Stormwater Pollution Prevention Plans (SWPPP). Mr. Ewbank has also determined impacts of forest harvesting practices on runoff processes and related impacts on streams and instream habitat. Mr. Ewbank has the ability to direct multidisciplinary work efforts involving diverse tasks and budgets on a variety of environmental engineering projects.

#### 4.1.3 Method of Providing Services and Quality Assurance

Herrera uses a two-tiered product review system to ensure high quality and accuracy of all work. Under the first tier, the project manager will provide initial review, and has major responsibility for developing technical and design reports that are accurate and thorough (including performance of fieldwork). The principal-in-charge, will provide second-tier review and holds ultimate responsibility for the technical integrity of work performed by our staff. This final review and approval of all work

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*Performance Period: 1992 – Present*

*Contract Amount: \$550,000*

Issaquah Highlands Comprehensive Monitoring. In cooperation with the City of Issaquah, King County, Sammamish Plateau Water and Sewer District, and Port Blakely Communities, Herrera developed the Issaquah Highlands Comprehensive Monitoring Plan. This monitoring plan, which is now being implemented by Herrera, is designed to evaluate construction and post-development impacts on surface and ground water resources of the 2,200-acre Planned Community Development located at Issaquah, Washington. Herrera's staff is conducting hydrologic studies on the site to assess the performance of stormwater retention and infiltration facilities, and to ensure the project is not adversely impacting natural surface water features. To facilitate these studies, Herrera has installed a variety of automated monitoring equipment including pressure transducers, capacitance depth probes, and doppler velocity sensors that are interfaced with data loggers. Automated probes and water samplers are also being employed to provide continuous records of turbidity at selected stream locations and to monitor the pollutant removal efficiency of stormwater treatment facilities. Herrera staff also monitor ground water levels and water quality at three onsite wells. Stream channel stability is being monitored at two onsite streams by surveying elevations at stream cross-sections. Data management, data interpretation, and reporting of all data are conducted on a regular, weekly basis including semi-annual reports that summarize all data collected.

#### Willapa River Microbial Source Tracking Study, Raymond, Pacific County, Washington

*Client: Pacific County Dept. of Community Development*

*Contact: Bryan Harrison, 360-875-9356*

*Performance Period: 8/2003 – 7/2005*

*Contract Amount: \$55,000*

Herrera developed a microbial source tracking study using a genetic fingerprinting technique to identify sources of fecal coliform bacteria in the Willapa River in Pacific County, Washington. This study was designed for implementation of the fecal coliform bacteria total maximum daily load (TMDL) developed by the Washington Department of Ecology in collaboration with the local watershed committee. Herrera prepared the sampling and analysis plan in accordance with Ecology guidelines, and trained local staff to collect fecal coliform bacteria samples and water quality data. Herrera is coordinating the collection of river water samples, and the collection of fecal waste samples from the watershed to update the bacteria DNA library with known sources from the Willapa River watershed. Herrera is coordinating the laboratory analysis of the collected bacteria cultures for isolation of pure *E. coli* strains and DNA sequencing (molecular ribotyping). Herrera will compile the bacteria enumeration and DNA matching results upon completion of one year of sampling, and will evaluate spatial, temporal, and hydrologic trends in the matching results and fecal coliform bacteria concentrations. A final project report will be prepared describing the study methods, comparing fecal coliform bacteria results to historical data, and will evaluating the fecal source matching results to assist the local committee with implementation of the fecal coliform bacteria TMDL.

#### Stormwater Microbial Source Tracking for SeaTac Airport, SeaTac, WA

*Client: Port of Seattle*

*Contact: Scott Tobiason, (206) 444-6798*

*Performance Period: 1999 – 2001*

*Contract Amount: \$60,000*

Herrera assisted the Port of Seattle with the Seattle-Tacoma International Airport Stormwater Management Program by employing a genetic fingerprinting technique to characterize sources of fecal coliform bacteria contamination in runoff to Des Moines Creek. Herrera developed the monitoring plan, collected animal and human source samples at various locations in the airport drainage basins, and coordinated stormwater sampling and analysis efforts by others. *Escherichia coli* DNA were isolated from the source and stormwater samples, and were compared to each other and to *E. coli* DNA from known fecal sources in a national database containing thousands of unique genotypes. Herrera



prepared a comprehensive report of the study findings. The matching results identified birds as the predominant fecal source at the airport, while human sources were also present. The Port of Seattle used these findings to develop additional source control actions that included removal of pigeon habitat and modification of aircraft wastewater handling procedures.

#### Green-Duwamish Watershed Water Quality Assessment, Seattle, Washington

*Client: King County DNRP / WLRD*

*Contact: Douglas Henderson, Project Manager, (206) 263-6317*

*Performance Period: 2003 – Present*

*Contract Amount: \$400,000*

Herrera is currently providing water quality, hydrology, land use, and biological data evaluation services to King County for the Green-Duwamish Watershed Water Quality Assessment. These services include preparation of two water quality data reports, a water quality pollutant loadings report, two benthic macroinvertebrate reports, and a microbial source tracking report. For the first water quality data report, Herrera has compiled and analyzed an extensive set of water quality and hydrologic monitoring data collected in 2001 and 2002 for 18 monitoring sites in the 264 square mile Green-Duwamish watershed (WRIA 9). Herrera will compile and evaluate data collected in 2003 for the second water quality data report. Hydrologic data analysis conducted for these water quality data reports includes the development of algorithms for separating base and storm flow portions of the hydrographs over the three year study period. The water quality loadings report will include calculations of loadings for each water quality parameter using discharge data for the monitored basins, estimates of loading factors for land use categories using the data collected, and detailed statistical analyses for evaluating potential relationships between pollutant concentrations and various environmental conditions. Herrera is also coordinating the preparation of two benthic macroinvertebrate reports that will evaluate data collected in 2002 and 2003 for approximately 200 sites in the Green-Duwamish watershed and the Cedar-Sammamish-Washington watershed (WRIA 8). These reports will assess habitat conditions in these watersheds based on the Benthic Index of Biotic Integrity (B-IBI) scores that are calculated from the benthic invertebrate data, and will evaluate relationships between the B-IBI scores and various water quality, hydrology, land use, and fish habitat conditions. Using information from the analyses described above, Herrera will make recommendations to King County for a long-term monitoring program in the Green-Duwamish watershed. Finally, Herrera will prepare a microbial source tracking report that evaluates genetic fingerprinting data collected for *E. coli* bacteria that have been isolated from water samples collected within the watershed.

#### Freeland Outfall Water Quality Improvement, Freeland, Island County, Washington

*Client: Island County Public Works Department*

*Contact: Phil Cohen, 360.679.7331 ext. 7440*

*Performance Period: 2002 – 2004*

*Contract Amount: \$91,500*

Herrera developed and implemented a quality assurance project plan (QAPP) to characterize water quality in Freeland, WA for Island County Public Works. The QAPP was prepared in accordance with the Centennial Clean Water Fund grant agreement and guidelines published by the Washington Department of Ecology. As part of this monitoring effort, three base flow and eight storm flow samples were collected at four locations within the Freeland drainage basin. Monitoring locations for the study were carefully selected to evaluate pollutant loads from specific land use categories (e.g., urban, residential, and rural), and to evaluate the treatment effectiveness of a stream/wetland system. Data obtained from these monitoring stations is being used to identify the primary sources of water quality impairment within the Freeland drainage basin. In addition, Herrera documented fish habitat conditions in the stream/wetland system using King County Level I stream habitat inventory protocols. Herrera also documented habitat conditions in a tidally-influenced section of the stream/wetland system using the Estuarine Habitat Assessment Protocol that was developed for the Puget Sound Estuary Program. Based on this information, Herrera will make preliminary recommendations to the Island County Public Works for water quality treatment options to address any observed problems.

#### 4.1.2 Company Profile and Experience

Herrera Environmental Consultants, Inc. (Herrera) has been providing a diverse range of civil / environmental engineering, environmental science, and planning services to clients throughout the western United States, since 1980. Herrera offers expertise in most aspects of environmental science and engineering services, including environmental and regulatory compliance, permitting, and restoration and mitigation, with additional expertise in public policy development, environmental training, and technical publications, as well as project planning, design, and storm water and drainage design services.

Herrera's Montana branch office, and main office for Montana-related services, is located in Missoula. During the last four years, Herrera has established this Montana office that staffed by long-time Montana residents, who have gained professional experience in Montana and surrounding areas. In addition to our Montana staff, a high level of focused expertise in environmental science, engineering, permitting, planning and public involvement is available from Herrera's Seattle and Portland offices.

Herrera has developed management strategies for water quality improvement and protection of aquatic habitats for over 20 years. Herrera has conducted water quality and sediment investigations for numerous lakes, streams, rivers, and wetlands located throughout the western states. Our expertise encompasses successful planning, implementation, and design strategies that have been applied to projects throughout the west for clients that include federal, state, and local agencies, as well as private sector clients. Our staff members are thoroughly familiar with the surface water and drinking water regulations and standards established by U.S. EPA and various state agencies. Herrera scientists have identified pollutant sources and targets, assessed and allocated pollutant source loads, and determined total maximum daily loads (TMDLs) based on established water quality criteria for receiving waters on 303(d) lists. We have conducted comprehensive water quality monitoring and habitat surveys of water bodies in urban, agricultural, and forested watersheds for the assessment of pollutant sources, impacts, and loads. Herrera staff have used various sampling techniques that include ultra-clean technique for low levels of pollutants, continuous long-term monitoring of multiple field parameters, automatic samplers for collection of stormwater samples, and rapid bioassessment protocols for assessing periphyton and macroinvertebrate communities. Herrera employs various analytical techniques to characterize pollutant sources including the identification of hydrocarbon compounds and sources, and genetic fingerprinting of fecal coliform bacteria. For several fecal coliform bacteria TMDL projects, Herrera has used the state-of-the-art ribotyping method, developed by Dr. Mansour Samadpour of the University of Washington Department of Environmental Health, to identify specific human and animal sources of *E. coli* bacteria isolated from receiving waters. The *E. coli* DNA library used for this method has greatly expanded to include bacteria sources from throughout the United States, such that 95 percent of the receiving water isolates matched known sources for a recent study conducted by Herrera that did not include collection of new source bacteria from the study watershed.

The following individuals are experienced in TMDL and water quality assessment services. Resumes further detailing this experience follow these brief summaries.

##### **Kathleen Adams, Senior Natural Resource Scientist / Wildlife Biologist – Project Manager**

Ms. Adams, a senior natural resource scientist and head of Herrera's Missoula, Montana office, has experience in wildlife, wetland, and plant ecology. Her consulting expertise includes identifying and describing sensitive areas and upland vegetative communities, and evaluating wildlife and fisheries habitat and use for NEPA/SEPA compliance, Endangered Species Act compliance, and environmental permitting. Ms. Adams has conducted and prepared biological assessments for construction projects for state transportation agencies in Washington and Montana, and for the Federal Highway Administration. Ms. Adams has also facilitated agreement between regulatory and proponent agencies on wetland mitigation for high impact projects. She has a wide range of field experience including upland and wetland plant identification and sampling, rare plant surveys, songbird point counts, waterfowl surveys, small mammal and herpetological surveys, wetland delineations, and stream surveys.

#### Rob Zisette, Aquatic Science Director – Technical Lead

Mr. Zisette, Herrera's aquatic science director, has 23 years of professional experience specializing in surface water management, including water quality assessments, stormwater management plans, aquatic plant management studies, lake restoration projects, and environmental impact statements. He has developed and implemented monitoring and quality assurance project plans for various freshwater and marine water and sediment quality investigations. Mr. Zisette has evaluated nonpoint source pollution and the effects of best management practices (BMPs) in streams and urban drainage basins. He has assessed benthic invertebrate populations, fish habitat, and riparian conditions in streams. Mr. Zisette has mapped aquatic plants, evaluated aquatic plant management techniques, assessed plankton communities, identified nutrient sources, and characterized taste and odor sources in lakes and drinking water reservoirs. Additional experience includes water quality impact analysis for solid and hazardous waste management projects, dredge disposal analysis for marine sediment management projects, laboratory analysis of water samples for various chemical and biological parameters, and validation of field and laboratory data.

#### John Lenth, Senior Environmental Scientist

Mr. Lenth is a senior environmental scientist with 10 years of experience in aquatic ecology, water quality, hydrology, and watershed management. He has a broad familiarity with field and laboratory procedures for conducting water quality studies in both lakes and streams. He has implemented several long-term water quality monitoring projects designed to assess the effectiveness of best management practices in controlling nonpoint source pollution from urban and agricultural land use. Mr. Lenth's background includes experience performing biological assessments of water quality using aquatic macroinvertebrates. He has used a wide variety of sampling techniques for aquatic macroinvertebrates and is skilled in freshwater invertebrate taxonomy. Mr. Lenth also has extensive experience in data management and statistical analysis. His background in statistics includes knowledge of both univariate and multivariate techniques for examining patterns in biological and water quality data. Mr. Lenth is highly proficient at installing and monitoring field water quality instruments, having installed and programmed a wide variety of devices for the remote collection of hydrologic and water quality data. His skills also include evaluating fish habitat quality in streams, mapping of habitat features with differential GPS, implementing quality assurance and quality control protocols, and analyzing water samples for various chemical and biological parameters. He has also been active in educating community groups on issues related to water quality, watershed management, and benthic ecology.

#### Jennifer B. Goldsmith, Environmental Scientist

Ms. Goldsmith has 12 years of experience conducting natural resource assessments throughout the Pacific Northwest. Her professional expertise includes ground water and surface water quality sampling, development of water quality monitoring programs, analysis of water quality data and impact prediction, forestry, and storm water modeling. Ms. Goldsmith has extensive experience preparing water quality analysis documentation for a variety of environmental impact statements, environmental assessments, and permit applications. She has extensive knowledge of the Clean Water Act specifically the 303(d) listing procedures and the Total Maximum Daily Load (TMDL) implementation process. She has completed Washington State Watershed Analysis Level 1 and 2 Riparian Function Assessments of canopy closure and stream temperature for numerous watersheds. She is familiar with Washington State Timber/Fish/Wildlife (T/F/W) guidelines and has implemented these guidelines to assess fisheries conditions and identify resource sensitivities. In addition, Ms. Goldsmith has prepared water resource, geology and soils existing conditions and impacts from various timber management options for NEPA environmental assessments. Ms. Goldsmith was a member of the team of scientists and biologists that conducted the first habitat conservation plan (HCP) in the state of Washington.

#### Dan Bennett, Staff Environmental Scientist

Mr. Bennett is an environmental scientist with 10 years of experience in a wide variety of disciplines including water quality, aquatic ecology, soil science, erosion control, and forest and watershed management. He is familiar with a wide array of field and laboratory procedures for conducting water quality monitoring and investigations of stream and soil quality, and assessing forests for habitat and

timber resources. Mr. Bennett has implemented several water quality monitoring projects designed to assess the effectiveness of best management practices in controlling runoff from construction projects and from the use of soil amendments. He has conducted studies of biotic integrity of streams using indices of benthic-macroinvertebrate health. Mr. Bennett is versed in surveying and map-making techniques, and has designed and implemented geographic information system (GIS) projects.

#### Michael C. Cawrse, Environmental Scientist

Mr. Cawrse is an environmental scientist with over 5 years of experience in water quality, aquatic ecology, and wetland delineation. He is familiar with field and laboratory procedures for conducting water quality studies of streams and lakes. He has implemented several long term monitoring studies designed to assess land use impacts on water quality and riparian habitat. Mr. Cawrse has additional experience with data management and statistical analysis. Other skills include wetland delineation, aquatic and riparian plant identification, aquatic macroinvertebrate identification, and the analysis of water samples for various chemical and biological parameters. He also has experience with toxicity testing of fresh and salt water. Mr. Cawrse has also administered several lake management and marine resource citizen advisory committees.

#### Alex Svendsen, Staff Environmental Scientist

Alex Svendsen is an environmental scientist with experience in water quality, hazardous waste remediation, and environmental restoration. He has implemented and analyzed best management practices and erosion control measures for numerous construction projects. His remediation experience includes utilizing residual-based soil amendments to neutralize acidic/heavy metal contaminated mine tailings. His familiarity with cutting edge in-situ remediation techniques promotes cost-effective means of remediating heavy metal contaminated soils to EPA Superfund specifications. Mr. Svendsen has experience restoring native vegetation on devastated lands using organic amendments. In addition, he has a broad knowledge of a variety of field and laboratory procedures used for monitoring and investigating streams, wetlands, lakes, and soils.

#### Mark Ewbank, P.E., Principal Engineer

Mark Ewbank, Principal Engineer and Herrera's Director of Surface Water Engineering, has 17 years of experience in water quality, water pollution control, stormwater management, stream restoration, and related hydrologic and hydraulic analyses. Mr. Ewbank has conducted numerous assessments of hydrologic conditions in natural and developed environments and is thoroughly familiar with the development of stormwater treatment and detention system designs, as well as applications of source control best management practices for the protection of surface and ground water. He has conducted analyses of the effects of various pollutants on streams, lakes, wetlands, and estuaries, and analyzed alternative strategies for effectiveness in controlling surface water pollution. He has developed estimates of potential soil erosion from construction projects and prepared erosion and sediment control plans and designs. Mr. Ewbank has contributed to the design of several stream restoration projects, and managed Herrera's multi-disciplinary design teams on some of those projects. Mr. Ewbank has experience in developing water quality monitoring programs to assess existing conditions and in designing stormwater control facilities for residential, commercial, and industrial land uses. In addition, Mr. Ewbank has experience in developing supporting information for NPDES permit applications and compliance documents and all components of Stormwater Pollution Prevention Plans (SWPPP). Mr. Ewbank has also determined impacts of forest harvesting practices on runoff processes and related impacts on streams and instream habitat. Mr. Ewbank has the ability to direct multidisciplinary work efforts involving diverse tasks and budgets on a variety of environmental engineering projects.

#### 4.1.3 Method of Providing Services and Quality Assurance

Herrera uses a two-tiered product review system to ensure high quality and accuracy of all work. Under the first tier, the project manager will provide initial review, and has major responsibility for developing technical and design reports that are accurate and thorough (including performance of fieldwork). The principal-in-charge, will provide second-tier review and holds ultimate responsibility for the technical integrity of work performed by our staff. This final review and approval of all work

products is the last step in a series of checks and balances that ensures refinement and review of work as it progresses. No draft documents will be issued to the State until Herrera's review process has occurred. These well-established review procedures enhance Herrera's ability to meet the State's needs throughout the duration of this contract and ensure that all work products are of the highest quality.

Herrera has recent experience that demonstrates our capabilities and methods of providing TMDL-related services. A specific example that conveys this experience in TMDLs is the Willapa River Microbial Source Tracking Study. The project is scheduled to be completed on time and within budget. This example project illustrates the methodology used by Herrera staff in gathering and analyzing water quality data for TMDL studies.

Herrera developed a microbial source tracking study to identify sources of fecal coliform bacteria in the Willapa River for implementation of the fecal coliform bacteria TMDL by Pacific County, Washington. Herrera staff members prepared the sampling and analysis plan and trained local staff to collect fecal coliform bacteria samples and water quality data. The Institute of Environmental Health was contracted to conduct the laboratory molecular ribotyping studies to identify specific sources of fecal coliform bacteria. A final project report will be prepared that will describe the study methods, compare fecal coliform bacteria results to historical data and will evaluate the fecal source matching results as a function of hydrology, season, and location in the watershed.

A Quality Assurance Project Plan has been included with this submittal to demonstrate Herrera's quality assurance procedures for this project.



#### 4.1.4 Staff Qualifications

Herrera's key team members provided in Table 1 are available and qualified to provide water quality services to the State of Montana. As indicated, each individual is fully trained and experienced in the environmental or engineering discipline they have provided technical writing documents for.

**Table 1. Herrera Team Members' Qualifications**

<b>Team Members</b>	<b>Overall Years of Experience</b>	<b>Years on Similar Projects</b>	<b>Degrees</b>	<b>Professional Registrations and Relevant Training</b>
Kathleen Adams	11	11	M.S. in Natural Resources, University of Wisconsin-Stevens Point, 1997 B.S. in Wildlife Management, University of New Hampshire, 1991	Implementing the National Environmental Policy Act on Federal Lands, Duke University, 2000
Rob Zisette	23	23	M.S. in Water Resource Management, University of Washington, 1980 B.S. in Environmental Biology, University of Calgary, 1978	OSHA 40-Hour Health and Safety Training for Hazardous Waste Sites, since 1988 Scuba Diving Certification, 1979
John Lenth	10	10	M.S. in Environmental Science, Huxley College, Western Washington University, 1995 B.A. in English, Seattle University, 1988	OSHA 40-Hour health and safety training for hazardous waste sites, 1997 WSDOT Certification as an Erosion and Spill Control Lead, 1997 6-Hour Confined Space Entry Training, 1998 WSDOT Biological Assessment Workshop; 1998
Jennifer Goldsmith	12	12	M.E.M. in Water Resources, Duke University, 1990 B.S. in Geology, Western Washington University, 1986	Watershed Analysis Analyst/Specialist-Hydrology, Riparian, and Public Works Modules, Washington Department of Natural Resources
Dan Bennett	10	10	M.S. Soils Science, University of Washington, 1999 B.S. Forestry and Resource Management, University of California at Berkeley, 1992	6-Hour Confined Space Entry Training, 2001 40-Hour HAZWOP Training, 2002
Michael Cawrse	9	9	M.S. in Environmental Science (Aquatic Ecology), Western Washington University, 1998 B.S. in Microbiology (Molecular Biology), University of Washington, 1989	Wetland Science and Management Certificate, University of Washington, 2001
Alex Svendsen	7	7	M.S. in Soils Science, University of Washington, 2002 B.S. in Geography, University of Utah, 1998	OSHA 40-Hour HAZWOPER Certification and Training, 2003 OSHA 4-Hour Confined Space Entry Certification and Training, 2003 US EPA OSC/START Training, Region 10, 2003
Mark Ewbank, PE	17	17	M.S. in Civil/Environmental Engineering, University of Washington, 1992 B.S. in Civil Engineering, University of Illinois, 1985	Professional Engineer #29434: Washington, 1992



## Project Manager and Key Technical Staff

Kathleen Adams, head of Herrera's Missoula Montana office, will be the project manager and primary point of contact for work orders resulting from this contract. Ms. Adams is a senior natural resources scientist with over 11 years of experience in water quality, wetlands, plant ecology and wildlife. She has successfully managed several projects in Montana including the Flathead Agency Irrigation Project Programmatic Biological Assessment for the Bureau of Indian Affairs. Ms. Adams will provide contract administration. Mark Ewbank, P.E. will serve as principal-in-charge and provide quality assurance for this contract. Mr. Ewbank has over 17 years of experience with surface water management including water quality studies and stormwater management to meet regulatory requirements such as TMDLs.

Rob Zisette, Herrera's Aquatic Science Director, will be the lead technical coordinator for the TMDL work orders resulting from this contract. Mr. Zisette has 23 years of professional experience in surface water management and environmental studies. He specializes in preparing water quality monitoring plans, stormwater management plans, watershed management plans, and lake management plans, and conducting water quality assessments, pollutant source tracking investigations, BMP evaluations, TMDL studies, sediment management investigations, aquatic plant management studies, lake diagnostic studies, and lake restoration projects.

Supporting Rob for the TMDL work on this contract will be John Lenth, Jennifer Goldsmith, Dan Bennett, Mike Cawrse, and Alex Svendsen. Mr. Lenth is a senior environmental scientist with 10 years of experience in aquatic ecology, water quality, hydrology, and watershed management. He has developed a number of statistical models for quantify pollutant loading rates in aquatic systems and is proficient with commercially available software for performing mixing zone analyses. Ms. Goldsmith is a project scientist with 12 years of experience conducting water quality assessments and has extensive experience with water quality regulations including TMDLs. Mr. Bennett, Mr. Cawrse and Mr. Svendsen are scientists with a combined 26 years of experience in developing and implementing water quality monitoring plans and interpreting water quality monitoring data.

Any agency using this contract to procure TMDL services can contact Kathleen Adams directly. Ms. Adams will also be the state agency's point of contact for any miscellaneous contractual issues. Once a request has been made for work in this area, Ms. Adams will work with the agency's project manager and Rob Zisette to identify the agency's primary needs and then develop a scope and budget for the project. Rob Zisette will then be the primary technical coordinator, and will perform technical oversight and review of all work.

## Section 4: Offeror Qualifications

### 4.0 State's Right to Investigate and Reject

Herrera understands and will comply.

### 4.1 Offeror Informational Requirements – All Service Categories

Herrera understands and will comply.

### 4.2 Offeror Qualification Requirements – Specific Service Categories

Herrera understands and will comply.

#### 4.1.1 References

Herrera Environmental Consultants has a history of successfully providing services to clients throughout the western United States. As an environmental science and engineering firm, Herrera combines the expertise of our scientists, engineers, and planners to provide an interdisciplinary approach to each project. This specialized approach provides our clients with a greater understanding of each of the key components in every project. In addition, attention to our client's needs and a commitment to satisfying those needs efficiently have been the key to Herrera's success in managing its past and present projects. The following projects illustrate our experience providing water quality modeling services to a variety of clients, as well as provide a client contact for each project that will attest to our capabilities.

WSDOT Bridge Washing AKART Feasibility Study and Water Quality Analysis, Seattle, Washington

*Client: Washington State Department of Transportation WSDOT EAO*

*Contact: Patrick Svoboda, 360.705.7490*

*Performance Period: 01/2003 – 06/2003*

*Contract Amount: \$45,502*

Herrera conducted a feasibility study to identify all known, available, and reasonable treatment (AKART) treatment options for effluent generated from the washing of WSDOT's bridges and ferry terminals. This washing is typically performed for routine cleaning purposes or to prepare these structures for painting. The treatment options evaluated through this study included tarp filtration and several variations of full containment with chemical treatment of the effluent. For each treatment option, indirect environmental impacts, technical feasibility, and estimated costs were evaluated. Based on this information, a preferred treatment option was subsequently identified and analyses performed to determine the "reasonable potential" for the associated effluent to cause violations of state water and sediment quality standards. For these analyses, the spreadsheet based models and the CORMIX software package were used to determine pollutant concentrations at the edge of the allowable mixing zone in typical receiving waters. This information was then used to support the development of NPDES permit conditions for WSDOT's bridge washing activities.

Issaquah Southeast Bypass NEPA EIS, Biological Studies, and Preliminary Engineering Design, Issaquah, Washington

*Client: City of Issaquah, Public Works Department*

*Contact: Pam Fox, City of Issaquah, Project Manager, (425) 837-3423*

*Performance Period: 1997 – present*

*Contract Amount: \$171,400*

Herrera assisted the City of Issaquah with preparation of technical documentation covering a wide range of environmental issues for an EIS for a 1-mile section of new roadway proposed on the east edge of the city. The Southeast Bypass would connect the Sunset Way interchange on Interstate 90 with Issaquah-Hobart Road to the south. The project corridor is at the base of Tiger Mountain adjacent to the Tiger Mountain Natural Resource Conservation Area. Herrera prepared EIS technical reports on wetlands, biological resources (wildlife and vegetation), fisheries, water quality, and waterways and hydrologic systems, as well as a biological assessment report for threatened and endangered species. Herrera subsequently prepared the corresponding technical sections of the EIS. Herrera scientists also provided design support on wetland mitigation and stormwater management issues. The project is in the process of preparing a Supplemental EIS for a different roadway alignment, and Herrera will be responsible for analysis and documentation of technical issues related to the subject areas listed above.

For the wetlands technical report, Herrera scientists delineated wetland boundaries in the project corridor, evaluated impacts to wetland functions and values, and prepared conceptual mitigation measures for new wetland areas. Prior to the wetland technical report, our staff scientists performed a wetland reconnaissance for the entire project area to support evaluation of alternative alignments. Herrera is currently preparing a wetland mitigation plan report that will expand on the details of mitigation site selection and conceptual mitigation design. For the biological resources technical report, Herrera scientists identified vegetation communities and wildlife habitat in the project corridor, including significant habitat types, and developed mitigation recommendations for the types of impacts expected with roadway construction. For the fisheries technical report, Herrera scientists conducted Level I stream surveys of two unnamed tributaries to Issaquah Creek that traverse the proposed bypass corridor, evaluated impacts to fish habitat and migration patterns, and developed appropriate mitigation measures to prevent adverse fishery impacts.

For the water quality technical report, Herrera staff estimated construction-phase erosion impacts on receiving waters, including phosphorus carried with eroded soils into Lake Sammamish. Herrera staff collected representative soil samples in the proposed project area for laboratory analysis of grain size distribution and phosphorus content. Herrera coupled the results of the soil sampling with calculations of construction site erosion using the Universal Soil Loss Equation to derive estimates of construction-

phase suspended sediment and phosphorus loading to receiving waters. Herrera calculated long-term pollutant loadings (including phosphorus) to Issaquah Creek, Lake Sammamish, and ground water from the roadway corridor for the No-Action alternative and development alternatives using published pollutant loading factors for various land uses. These calculations also factored in the pollutant removal effectiveness of proposed stormwater treatment facilities under the roadway development alternatives. Herrera prepared mitigation recommendations to prevent surface and ground water quality degradation.

For the waterways and hydrologic systems technical report, Herrera summarized existing features of natural and constructed drainage systems in the project area, evaluated changes in stormwater runoff characteristics that would occur with roadway construction, and prepared recommendations for stormwater management facilities that would reduce offsite impacts. Herrera also assessed ground water conditions and calculated potential recharge impacts based on hydrologic modeling of the project site under existing and developed conditions.

For the biological assessment, Herrera summarized stream and wetland habitat characteristics, usage of the site area by Chinook salmon, bull trout, and wintering bald eagles, and potential impacts of the project on these threatened and endangered species. Herrera also assisted with presentations of wetland and fisheries issues at meetings involving agency representatives and the public.

#### Water Quality Modeling Report for Roslyn Lake Alternatives Analysis, Sandy, Oregon

*Client: City of Portland Bureau of Water Works (BWW)*

*Contact: Bill Baber, (503) 248-9507*

*Performance Period: 1999 - 2000*

*Contract Amount: \$6,520*

Herrera conducted a water quality modeling analysis for the City of Portland Water Bureau that evaluated future conditions of Roslyn Lake in Sandy, Oregon resulting from the decommissioning of a power plant on this storage reservoir. The project involved review of a previous water quality modeling effort, collection of background hydrology and water quality data. The project also involved the development of lake morphometry and hydrology alternatives that were based on protection of beneficial uses, a new source of inflow, and dramatic reduction of inflow rates. A phosphorus cycling model (PHOSMOD) used to estimate the seasonal and long term water quality effects of the chosen alternatives, and a preferred alternative was recommended.

#### Issaquah Highlands Master Plan Development Water Quality Studies, Issaquah, Washington

*Client: Port Blakely Communities*

*Contact: Carol Beck, Port Blakely Communities, (425) 391-4700*

*Performance Period: 1992 – Ongoing*

*Contract Amount: \$550,000*

Issaquah Highlands Comprehensive Monitoring. In cooperation with the City of Issaquah, King County, Sammamish Plateau Water and Sewer District, and Port Blakely Communities, Herrera developed the Issaquah Highlands Comprehensive Monitoring Plan. This monitoring plan, which is now being implemented by Herrera, is designed to evaluate construction and post-development impacts on surface and ground water resources of the 2,200-acre Planned Community Development located at Issaquah, Washington. Herrera's staff is conducting hydrologic and water quality studies on the site to assess the performance of stormwater retention and infiltration facilities, and to ensure the project is not adversely impacting natural surface water features. To facilitate these studies, Herrera has installed a variety of automated monitoring equipment including pressure transducers, capacitance depth probes, doppler velocity sensors, and turbidity sensors that are interfaced with data loggers. Herrera has also generated regression models to predict annual sediment and phosphorus loads in streams draining the site. These models are developed based on measured concentrations of these parameters in grab samples that are collected from the each stream and a continuous discharge record obtained from automated monitoring equipment. The resultant load estimates are compared to load estimates from the project's environmental impact statement in order to assess potential adverse water quality impacts from site development. Herrera staff also monitor ground water levels and water quality at three onsite wells. Stream channel stability is being monitored at two onsite streams by surveying elevations at

stream cross-sections. Data management, data interpretation, and reporting of all data are conducted on a regular, weekly basis including semi-annual reports that summarize all data collected.

#### Freeland Outfall Water Quality Improvement, Freeland, Washington

*Client: Island County Public Works Department*

*Contact: Phil Cohen, 360.679.7331 ext. 7440*

*Performance Period: 2002 – 2004*

*Contract Amount: \$91,500*

Herrera developed and implemented a quality assurance project plan (QAPP) to characterize water quality in Freeland, WA for Island County Public Works. The QAPP was prepared in accordance with the Centennial Clean Water Fund grant agreement and guidelines published by the Washington Department of Ecology. As part of this monitoring effort, three base flow and eight storm flow samples were collected at four locations within the Freeland drainage basin. Monitoring locations for the study were carefully selected to evaluate pollutant loads from specific land use categories (e.g., urban, residential, and rural), and to evaluate the treatment effectiveness of a stream/wetland system. Statistical analyses were subsequently performed on the data obtained from these monitoring stations in order to identify the primary sources of water quality impairment within the Freeland drainage basin. Additional water quality modeling was also performed to quantify pollutant loading rates from the Freeland drainage basin to Holmes Harbor, a sensitive marine environment with important commercial shellfish operations. In addition, Herrera documented fish habitat conditions in the stream/wetland system using King County Level I stream habitat inventory protocols. Herrera also documented habitat conditions in a tidally-influenced section of the stream/wetland system using the Estuarine Habitat Assessment Protocol that was developed for the Puget Sound Estuary Program. Based on this information, Herrera will make preliminary recommendations to the Island County Public Works for water quality treatment options to address any observed problems.

#### 4.1.2 Company Profile and Experience

Herrera Environmental Consultants, Inc. (Herrera) has been providing a diverse range of civil / environmental engineering, environmental science, and planning services to clients throughout the western United States, since 1980. Herrera offers expertise in most aspects of environmental science and engineering services, including environmental and regulatory compliance, permitting, and restoration and mitigation, with additional expertise in public policy development, environmental training, and technical publications, as well as project planning, design, and storm water and drainage design services.

Herrera's Montana branch office is located in Missoula. During the last four years, Herrera has established this Montana office that staffed by long-time Montana residents, who have gained professional experience in Montana and surrounding areas. In addition to our Montana staff, a high level of focused expertise in environmental science, engineering, permitting, planning and public involvement is available from Herrera's Seattle and Portland offices.

Herrera has provided modeling services for a wide range of water quality and hydrologic projects. Our staff uses a variety of computer models to enhance the scope of environmental and engineering analysis. Herrera understands that advances in computer technology have greatly increased the complexity of analysis that can be performed for environmental and engineering projects, and, as such, our staff is educated in current versions of necessary modeling techniques and programs. Herrera's modeling experience includes developing custom spreadsheet models, using custom models developed by others, and using many commercially available and public domain models such as CORMIX, XP-SWMM, HEC-1, HEC-RAS, SNTMP, KCRTS, HEC-IFH, HSPF, MGS Flood, StormShed, and HY8. Herrera is also familiar with ground water models such as MODFLOW, MT3D, WINFLOW, ATRANS, MODPATH, and MOC. Herrera's staff has performed modeling of hydrologic processes, open channel and pipe system hydraulics, water quality parameters, turbidity, and construction site erosion and sediment transport. Herrera also maintains GIS and CAD capabilities to support these modeling efforts and draws upon sophisticated computer data resources in model development and calibration.



The following Herrera individuals are qualified to provide water quality modeling services to the State of Montana. Resumes detailing the modeling qualifications of each individual follow these brief summaries.

**Kathleen Adams, Senior Natural Resource Scientist / Wildlife Biologist – Project Manager**

Ms. Adams, a senior natural resource scientist and head of Herrera's Missoula, Montana office, has experience in wildlife, wetland, and plant ecology. Her consulting expertise includes identifying and describing sensitive areas and upland vegetative communities, and evaluating wildlife and fisheries habitat and use for NEPA/SEPA compliance, Endangered Species Act compliance, and environmental permitting. Ms. Adams has conducted and prepared biological assessments for construction projects for state transportation agencies in Washington and Montana, and for the Federal Highway Administration. Ms. Adams has also facilitated agreement between regulatory and proponent agencies on wetland mitigation for high impact projects. She has a wide range of field experience including upland and wetland plant identification and sampling, rare plant surveys, songbird point counts, waterfowl surveys, small mammal and herpetological surveys, wetland delineations, and stream surveys.

**John Lenth, Senior Environmental Scientist – Technical Lead**

Mr. Lenth is a senior environmental scientist with 10 years of experience in aquatic ecology, water quality, hydrology, and watershed management. He has a broad familiarity with field and laboratory procedures for conducting water quality studies in both lakes and streams. He has implemented several long-term water quality monitoring projects designed to assess the effectiveness of best management practices in controlling nonpoint source pollution from urban and agricultural land use. Mr. Lenth's background includes experience performing biological assessments of water quality using aquatic macroinvertebrates. He has used a wide variety of sampling techniques for aquatic macroinvertebrates and is skilled in freshwater invertebrate taxonomy. Mr. Lenth also has extensive experience in data management and statistical analysis. His background in statistics includes knowledge of both univariate and multivariate techniques for examining patterns in biological and water quality data. Mr. Lenth is highly proficient at installing and monitoring field water quality instruments, having installed and programmed a wide variety of devices for the remote collection of hydrologic and water quality data. His skills also include evaluating fish habitat quality in streams, mapping of habitat features with differential GPS, implementing quality assurance and quality control protocols, and analyzing water samples for various chemical and biological parameters. He has also been active in educating community groups on issues related to water quality, watershed management, and benthic ecology.

**Mark Ewbank, P.E., Principal Engineer**

Mark Ewbank, Herrera's Director of Surface Water Engineering, has 17 years of experience in water quality, water pollution control, stormwater management, stream restoration, and related hydrologic and hydraulic analyses. His modeling experience includes modeling of stormwater runoff and stream flows, preparation of hydrologic and hydraulic calculations for stormwater collection, conveyance, treatment and detention systems, analysis of fish passage culverts, assessment of hydraulic forces on stream channel features, analysis of landfill leachate collection systems, and applications of computer models to assess peak floodwater elevations. Mr. Ewbank has conducted numerous assessments of hydrologic conditions in natural and developed environments and is thoroughly familiar with the development of stormwater treatment and detention system designs, as well as applications of source control best management practices for the protection of surface and ground water. He has conducted analyses of the effects of various pollutants on streams, lakes, wetlands, and estuaries, and analyzed alternative strategies for effectiveness in controlling surface water pollution. He has developed estimates of potential soil erosion from construction projects and prepared erosion and sediment control plans and designs. Mr. Ewbank has contributed to the design of several stream restoration projects, and managed Herrera's multi-disciplinary design teams on some of those projects. Mr. Ewbank has experience in developing water quality monitoring programs to assess existing conditions and in designing stormwater control facilities for residential, commercial, and industrial land uses. In addition, Mr. Ewbank has experience in developing supporting information for NPDES permit

applications and compliance documents and all components of Stormwater Pollution Prevention Plans (SWPPP). Mr. Ewbank has also determined impacts of forest harvesting practices on runoff processes and related impacts on streams and instream habitat. Mr. Ewbank has the ability to direct multidisciplinary work efforts involving diverse tasks and budgets on a variety of environmental engineering projects.

#### Rob Zisette, Aquatic Science Director

Mr. Zisette, Herrera's aquatic science director, has 23 years of professional experience specializing in surface water management, including water quality assessments and modeling, stormwater management plans, aquatic plant management studies, lake restoration projects, and environmental impact statements. He has developed and implemented monitoring and quality assurance project plans for various freshwater and marine water and sediment quality investigations. Mr. Zisette has evaluated nonpoint source pollution and the effects of best management practices (BMPs) in streams and urban drainage basins. He has assessed benthic invertebrate populations, fish habitat, and riparian conditions in streams. Mr. Zisette has mapped aquatic plants, evaluated aquatic plant management techniques, assessed plankton communities, identified nutrient sources, and characterized taste and odor sources in lakes and drinking water reservoirs. Additional experience includes water quality impact analysis for solid and hazardous waste management projects, dredge disposal analysis for marine sediment management projects, laboratory analysis of water samples for various chemical and biological parameters, and validation of field and laboratory data.

#### Robin L. Kirschbaum, PE, Water Resources Engineer

Ms. Kirschbaum is a water resources engineer with experience in numerous water-related fields, including basin planning; flood studies, stream restoration; stormwater management; and advanced hydrologic, hydraulic, and sediment stability modeling and analysis. Typical projects include flood studies, comprehensive drainage plans, stream restoration projects, environmental impact statements, stormwater management plans, and large-scale regional planning for stormwater infrastructure projects. She has extensive experience in computer modeling for hydrologic, hydraulic, and riverine sediment mobility applications, regularly using software such as HSPF, HEC-RAS, HEC-HMS, MODRET, MGS FLOOD, STELLA, EXCEL, SEDCAD, STORMSHED, GIS applications, and custom software.

#### Matthew J. Brennan, PE, Project Environmental Engineer

Mr. Brennan is an environmental engineer with expertise in hydrology, hydraulics, surface water quality, civil engineering design, and stream ecology. He has 8 years of experience that includes design and analysis of stormwater conveyance, treatment, and detention facilities, and design of surface water restoration projects including the installation of bioengineered bank stabilization measures and large woody debris for habitat and channel stabilization. His experience also includes stormwater management, hydrologic and water quality modeling, estimating sediment and water quality pollutant loads from construction sites and urban lands, collecting and analyzing water quality data, and stream and stormwater flow monitoring. He has a working knowledge of local and state-level stormwater requirements and guidelines in the Pacific Northwest, and has assisted in revising the Washington State Department of Transportation's (WSDOT's) Highway Runoff Manual. He has prepared plans, specifications, and cost estimates for drainage design and stream/wetland restoration projects. Mr. Brennan is skilled with basic computer applications, hydrologic models (StormShed/ WaterWorks, MGS Flood, WWHM, KCRS, HSPF), hydraulic models (HEC-RAS, CORMIX, HY8), ACCESS database design, AutoCAD, and many field hydrology/water quality monitoring instruments (ISCO, Unidata, Solomat, Hydrolab, Campbell Scientific).

#### 4.1.3 Method of Providing Services and Quality Assurance

Herrera uses a two-tiered product review system to ensure high quality and accuracy of all work. Under the first tier, the project manager will provide initial review, and has major responsibility for developing technical and design reports that are accurate and thorough (including performance of fieldwork). The principal-in-charge, will provide second-tier review and holds ultimate responsibility for the technical integrity of work performed by our staff. This final review and approval of all work



products is the last step in a series of checks and balances that ensures refinement and review of work as it progresses. No draft documents will be issued to the State until Herrera's review process has occurred. These well-established review procedures enhance Herrera's ability to meet the State's needs throughout the duration of this contract and ensure that all work products are of the highest quality.

Herrera has recent experience that demonstrates our capabilities and methods of providing modeling services. A specific example that conveys this experience in water quality modeling is Freeland Outfall Water Quality Improvement. The project is scheduled to be completed on time and within budget. This example project illustrates the methodology used by Herrera staff in gathering, modeling, and analyzing water quality data.

For this example project, Herrera developed and implemented a quality assurance project plan (QAPP) to characterize water quality in Freeland, WA for Island County Public Works. This QAPP was prepared in accordance with guidelines published by the Washington Department of Ecology. Monitoring for this project involved the collection base flow and storm flow samples at four locations within the Freeland drainage basin. Each monitoring station was carefully selected to evaluate pollutant loads from specific land use categories (e.g., urban, residential, and rural), and to evaluate the treatment effectiveness of a stream/wetland system. Statistical analyses were then performed on the collected data in order to identify the primary sources of water quality impairment within the drainage basin. In addition, Herrera developed water quality models from the collected data in order to quantify pollutant loading rates for stormwater that was discharged to Holmes Harbor, a sensitive marine environment with important commercial shellfish operations. Using the Statistica software package, regression analysis was used to model relationships between instantaneous pollutant loading rates and stream discharge. Because these relationships were typically non-linear in nature, the data were transformed so that models could be developed using linear functions. A correction factor was then applied to the models to account for any resultant "transformation bias". These models were then applied to the long-term discharge record for the basin in order to estimate annual and areal pollutants loads. Based on the information obtained from these analyses, Herrera is making preliminary recommendations to the Island County Public Works for water quality treatment options to address observed problems.

A Quality Assurance Project Plan has been included with this submittal to demonstrate Herrera's quality assurance procedures for this project.

#### 4.1.4 Staff Qualifications

Herrera's key team members provided in Table 1 are available and qualified to provide water quality modeling services to the State of Montana. As indicated, each individual is fully trained and experienced in the environmental or engineering discipline they have provided technical writing documents for.

**Table 1. Herrera Team Members' Qualifications**

Team Members	Overall Years of Experience	Years on Similar Projects	Degrees	Professional Registrations and Relevant Training
Kathleen Adams	11	11	M.S. in Natural Resources, University of Wisconsin-Stevens Point, 1997 B.S. in Wildlife Management, University of New Hampshire, 1991	Implementing the National Environmental Policy Act on Federal Lands, Duke University, 2000
John Lenth	10	6	M.S. in Environmental Science, Huxley College, Western Washington University, 1995 B.A. in English, Seattle University, 1988	OSHA 40-Hour health and safety training for hazardous waste sites, 1997 WSDOT Certification as an Erosion and Spill Control Lead, 1997 6-Hour Confined Space Entry Training, 1998 WSDOT Biological Assessment Workshop; 1998
Mark Ewbank PE	17	10	M.S. in Civil/Environmental Engineering, University of Washington, 1992 B.S. in Civil Engineering, University of Illinois, 1985	Professional Engineer #29434: Washington, 1992
Rob Zisette	23	23	M.S. in Water Resource Management, University of Washington, 1980 B.S. in Environmental Biology, University of Calgary, 1978	OSHA 40-Hour Health and Safety Training for Hazardous Waste Sites, since 1988 Scuba Diving Certification, 1979
Robin Kirschbaum, PE	9	1	M.S.C.E. in Environmental Engineering, University of Washington, 1997 B.S. in Civil Engineering, University of Texas, 1995	Washington Registered Professional Engineer #38345, January 2002
Matt Brennan, PE	9	8	M.S. in Civil Engineering, University of Washington, 1996 B.S. in Civil Engineering, University of California-Berkeley, 1994	Professional Engineer #65682: Oregon, 2001

## Project Manager and Key Technical Staff

Kathleen Adams, head of Herrera's Missoula Montana office, will be the project manager and primary point of contact for work orders resulting from this contract. Ms. Adams is a senior natural resources scientist with over 11 years of experience in water quality, wetlands, plant ecology and wildlife. She has successfully managed several projects in Montana including the Flathead Agency Irrigation Project Programmatic Biological Assessment for the Bureau of Indian Affairs. Ms. Adams will provide contract administration. Mark Ewbank, P.E. will serve as principal-in-charge and provide quality assurance for this contract. Mr. Ewbank has over 17 years of experience with surface water management and water quality related studies.

Matt Brennan, a project environmental engineer in Herrera's Portland, Oregon office, will be the lead technical coordinator for water quality modeling work orders resulting from this contract. Matt is an environmental engineer with expertise in hydrology, hydraulics, surface water quality, civil engineering design, and stream ecology. He has 8 years of experience in stormwater management, hydrologic and water quality modeling, estimating sediment and water quality pollutant loads from construction sites and urban lands, collecting and analyzing water quality data, and stream and stormwater flow monitoring.

Supporting Matt for water quality modeling work on this contract will be John Lenth, Mark Ewbank, Rob Zisette, and Robin Kirschbaum. Mr. Lenth is a senior environmental scientist with 10 years of experience in aquatic ecology, water quality, hydrology, and watershed management. He has developed a number of statistical models for quantify pollutant loading rates in aquatic systems and is proficient with commercially available software for performing mixing zone analyses. Mr. Ewbank has developed numerous models for quantifying water quality impacts from various types of land use. Mr. Zisette has 23 years of professional experience specializing in surface water management, including water quality assessments and modeling, stormwater management plans, aquatic plant management studies, lake restoration projects, and environmental impact statements. He has experience developing model for assessing water quality impacts in lakes. Finally, Ms. Kirschbaum is a water resources engineer with experience in numerous water-related fields, including basin planning; flood studies, stream restoration; stormwater management; and advanced hydrologic, hydraulic, and sediment stability modeling and analysis.

Any agency using this contract to procure water quality modeling services can contact Kathleen Adams directly. Ms. Adams will also be the state agency's point of contact for any miscellaneous contractual issues. Once a request has been made for work in this area, Ms. Adams will work with the agency's project manager and Matt Brennan to identify the agency's primary needs and then develop a scope and budget for the project. Mr. Brennan will then be the primary technical coordinator and will perform all quality assurance reviews on the associated analyses.

## Section 4: Offeror Qualifications

### 4.0 State's Right to Investigate and Reject Herrera understands and will comply.

### 4.1 Offeror Informational Requirements – All Service Categories Herrera understands and will comply.

### 4.2 Offeror Qualification Requirements – Specific Service Categories Herrera understands and will comply.

#### 4.1.1 References

Herrera Environmental Consultants has a history of successfully providing services to clients throughout the western United States. As an environmental science and engineering firm, Herrera combines the expertise of our scientists, engineers, and planners to provide an interdisciplinary approach to each project. This specialized approach provides our clients with a greater understanding of each of the key components in every project. In addition, attention to our client's needs and a

commitment to satisfying those needs efficiently have been the key to Herrera's success in managing its past and present projects. The following projects illustrate our experience providing statistical services to a variety of clients, as well as provide a client contact for each project that will attest to our capabilities.

#### Green-Duwamish Watershed Water Quality Assessment, Seattle, Washington

*Client: King County DNRP / WLRD*

*Contact: Douglas Henderson, Project Manager, (206) 263-6317*

*Performance Period: 2/6/2003 (NTP) -- 12/31/2005*

*Contract Amount: \$400,000*

Herrera is currently providing water quality, hydrology, land use, and biological data evaluation services to King County for the Green-Duwamish Watershed Water Quality Assessment. These services include preparation of two water quality data reports, a water quality pollutant loadings report, two benthic macroinvertebrate reports, and a microbial source tracking report. For the first water quality data report, Herrera has compiled and analyzed an extensive set of water quality and hydrologic monitoring data collected in 2001 and 2002 for 18 monitoring sites in the 264 square mile Green-Duwamish watershed (WRIA 9). A statistical analysis of spatial trends in the watershed was performed in connection with this analysis. Herrera will compile and evaluate data collected in 2003 for the second water quality data report. Hydrologic data analysis conducted for these water quality data reports includes the development of algorithms for separating base and storm flow portions of the hydrographs over the three year study period. The water quality loadings report will include calculations of loadings for each water quality parameter using discharge data for the monitored basins, estimates of loading factors for land use categories using the data collected, and detailed statistical analyses for evaluating potential relationships between pollutant concentrations and various environmental conditions. Herrera is also coordinating the preparation of two benthic macroinvertebrate reports that will evaluate data collected in 2002 and 2003 for approximately 200 sites in the Green-Duwamish watershed and the Cedar-Sammamish-Washington watershed (WRIA 8). These reports will assess habitat conditions in these watersheds based on the Benthic Index of Biotic Integrity (B-IBI) scores that are calculated from the benthic invertebrate data, and will evaluate relationships between the B-IBI scores and various water quality, hydrology, land use, and fish habitat conditions. Using information from the analyses described above, Herrera will make recommendations to King County for a long-term monitoring program in the Green-Duwamish watershed. Finally, Herrera will prepare a microbial source tracking report that evaluates genetic fingerprinting data collected for *E. coli* bacteria that have been isolated from water samples collected within the watershed.

#### Des Moines Water Quality Monitoring Program, Des Moines, Washington

*Client: City of Des Moines, Surface Water Mgmt. Utility*

*Contact: Mr. Loren Reinhold, Assistant City Engineer, City of Des Moines Public Works (206) 870-6524*

*Performance Period: 1994 – 2000*

*Contract Amount: \$260,000*

Herrera developed the City of Des Moines Water Quality Monitoring Program to evaluate benefits of the city's stormwater management plan over a 5-year period in three streams located in the City of Des Moines. Herrera prepared the water quality monitoring and quality assurance project plan that was approved by the Department of Ecology. Herrera scientists monitored water quality during five storm events and three base flow periods each year. Herrera also measured stream flow, developed discharge rating curves, assessed fisheries habitat and benthic invertebrate populations, conducted nonpoint source pollution tracking, validated water quality data, and presented results in annual reports. For the final project report, Herrera evaluated spatial and temporal trends in water quality and benthic invertebrate populations using state-of-the-art statistical procedures.

In addition to water quality monitoring, Herrera also conducted post-restoration stream habitat and vegetation monitoring on the lowermost 400-foot reach of Des Moines Creek. The City of Des Moines had completed restoration of this section of the creek in 1991, and was required by the U.S. Army Corps of Engineers to conduct this monitoring in compliance with the mitigation plan. Herrera biologists

reviewed the planting plan identifying the locations of plantings along the reach, and used it to evaluate the existing vegetation conditions. Vegetation characteristics were recorded by counting trees and estimating the percent coverage of shrubs and herbs within each planting area. Survival of plantings was evaluated by comparing the existing coverage of planted species to what was actually planted. The presence of invasive species was also recorded. Stream channel characteristics were assessed by monitoring substrate conditions, vegetative cover, fish habitat, streambank stability, and other features. Recommendations were made to improve conditions by controlling invasive species, planting native vegetation, and properly maintaining the riparian corridor.

#### Freeland Outfall Water Quality Improvement, Freeland, Washington

*Client: Island County Public Works Department*

*Contact: Phil Cohen, 360.679.7331 ext. 7440*

*Performance Period: 8/26/02 - 6/30/04*

*Contract Amount: \$91,500*

Herrera developed and implemented a quality assurance project plan (QAPP) to characterize water quality in Freeland, WA for Island County Public Works. The QAPP was prepared in accordance with the Centennial Clean Water Fund grant agreement and guidelines published by the Washington Department of Ecology. As part of this monitoring effort, three base flow and eight storm flow samples were collected at four locations within the Freeland drainage basin. Monitoring locations for the study were carefully selected to evaluate pollutant loads from specific land use categories (e.g., urban, residential, and rural), and to evaluate the treatment effectiveness of a stream/wetland system. Statistical analyses were subsequently performed on the data obtained from these monitoring stations in order to identify the primary sources of water quality impairment within the Freeland drainage basin. Additional water quality modeling was also performed to quantify pollutant loading rates from the Freeland drainage basin to Holmes Harbor, a sensitive marine environment with important commercial shellfish operations. In addition, Herrera documented fish habitat conditions in the stream/wetland system using King County Level I stream habitat inventory protocols. Herrera also documented habitat conditions in a tidally-influenced section of the stream/wetland system using the Estuarine Habitat Assessment Protocol that was developed for the Puget Sound Estuary Program. Based on this information, Herrera will make preliminary recommendations to the Island County Public Works for water quality treatment options to address any observed problems.

#### Issaquah Highlands Master Plan Development Water Quality Studies, Issaquah, Washington

*Client: Port Blakely Communities*

*Contact: Carol Beck, Port Blakely Communities, (425) 391-4700*

*Performance Period: 1992 – Ongoing*

*Contract Amount: \$550,000*

Issaquah Highlands Comprehensive Monitoring. In cooperation with the City of Issaquah, King County, Sammamish Plateau Water and Sewer District, and Port Blakely Communities, Herrera developed the Issaquah Highlands Comprehensive Monitoring Plan. This monitoring plan, which is now being implemented by Herrera, is designed to evaluate construction and post-development impacts on surface and ground water resources of the 2,200-acre Planned Community Development located at Issaquah, Washington. Herrera's staff is conducting hydrologic and water quality studies on the site to assess the performance of stormwater retention and infiltration facilities, and to ensure the project is not adversely impacting natural surface water features. To facilitate these studies, Herrera has installed a variety of automated monitoring equipment including pressure transducers, capacitance depth probes, doppler velocity sensors, and turbidity sensors that are interfaced with data loggers. Herrera has also generated regression models to predict annual sediment and phosphorus loads in streams draining the site. These models are developed based on measured concentrations of these parameters in grab samples that are collected from the each stream and a continuous discharge record obtained from automated monitoring equipment. The resultant load estimates are compared to load estimates from the project's environmental impact statement in order to assess potential adverse water quality impacts from site development. Herrera conducts statistical analyses on collected stream flow data to determine if base flow discharge rates are being maintained relative to predevelopment levels. Herrera staff also monitor ground water levels and water quality at three onsite wells. Stream channel stability

is being monitored at two onsite streams by surveying elevations at stream cross-sections. Data management, data interpretation, and reporting of all data are conducted on a regular, weekly basis including semi-annual reports that summarize all data collected.

#### City of Issaquah Swirl Concentrator Performance Monitoring, Issaquah, Washington

*Client: City of Issaquah*

*Contact: Kerry Ritland, Senior Water Resource Engineer, (425) 837-3410*

*Performance Period: 2000 – 2001*

*Contract Amount: \$44,546*

Herrera developed and implemented a monitoring plan designed to assess the performance of a swirl concentrator installed by the City of Issaquah to treat urban stormwater runoff. Herrera scientists installed and maintained automated equipment to continuously record water inflow and outflow rates from the swirl concentrator. To compute pollutant loads entering and leaving the swirl concentrator, inflow and outflow water samples were collected during 13 storm events for analysis of pollutant concentrations. Particle size distribution and pollutant concentrations in solid material trapped by the swirl concentrator were also evaluated using a mass balance approach. Statistical analyses were performed on the pollutant loading data in order to document the effectiveness of the system. Results from this study were compiled by Herrera in a report submitted to the City of Issaquah and Washington State Department of Ecology.

#### 4.1.2 Company Profile and Experience

Herrera Environmental Consultants, Inc. (Herrera) has been providing a diverse range of civil / environmental engineering, environmental science, and planning services to clients throughout the western United States, since 1980. Herrera offers expertise in most aspects of environmental science and engineering services, including environmental and regulatory compliance, permitting, and restoration and mitigation, with additional expertise in public policy development, environmental training, and technical publications, as well as project planning, design, and storm water and drainage design services.

Herrera's Montana branch office is located in Missoula. During the last four years, Herrera has established this Montana office that staffed by long-time Montana residents, who have gained professional experience in Montana and surrounding areas. In addition to our Montana staff, a high level of focused expertise in environmental science, engineering, permitting, planning and public involvement is available from Herrera's Seattle and Portland offices.

Over our 20-year history, Herrera has used statistical analyses to support a wide variety of water resources studies. Specific applications that are relevant to this project include: assessments of spatial and temporal trends in water quality data; pollutant loading estimates for various land uses; identification of pollutant sources for specific receiving waters; performance evaluations for stormwater treatment BMPs; and the examination of specific relationships between biological, chemical, and physical parameters that are associated with aquatic systems. Herrera's staff is proficient with traditional parametric statistics and more specialized nonparametric techniques that are often required for analyzing water quality data. Our staff is also well versed in the use of multivariate clustering and ordination algorithms that can be used to detect and explore trends in water quality and/or biological data. Furthermore, our staff can provide assistance in the design phase of your project to ensure that statistically valid inferences can be made from the collected data. To support our work in this area, Herrera possesses advanced software packages (e.g., Statistica) for statistical analysis and data visualization. The rigorous incorporation of these techniques in our study designs and analyses has made Herrera a well-respected leader in the water resource investigation field.

The following Herrera individuals are qualified to provide statistical analysis services to the State of Montana. Resumes detailing the statistical analysis qualifications of each individual follow these brief summaries.



**Kathleen Adams, Senior Natural Resource Scientist / Wildlife Biologist – Project Manager**

Ms. Adams, a senior natural resource scientist and head of Herrera's Missoula, Montana office, has experience in wildlife, wetland, and plant ecology. Her consulting expertise includes identifying and describing sensitive areas and upland vegetative communities, and evaluating wildlife and fisheries habitat and use for NEPA/SEPA compliance, Endangered Species Act compliance, and environmental permitting. Ms. Adams has conducted and prepared biological assessments for construction projects for state transportation agencies in Washington and Montana, and for the Federal Highway Administration. Ms. Adams has also facilitated agreement between regulatory and proponent agencies on wetland mitigation for high impact projects. She has a wide range of field experience including upland and wetland plant identification and sampling, rare plant surveys, songbird point counts, waterfowl surveys, small mammal and herpetological surveys, wetland delineations, and stream surveys.

**John Lenth, Senior Environmental Scientist – Technical Lead**

Mr. Lenth is a senior environmental scientist with 10 years of experience in water quality, watershed management, and aquatic ecology. Mr. Lenth's background includes experience performing rapid biological assessments of water quality using aquatic invertebrates. He has extensive experience in data management and statistical analysis. His background in statistics includes knowledge of both univariate and a multivariate technique for examining patterns in biological and water quality data. His research in aquatic ecology has involved the use of multivariate ordination techniques to define abiotic variables that explain trends observed in biological communities. He is also proficient in the following multivariate techniques: principle component analysis, correspondence analyses, metric and non-metric clustering, and non-metric multidimensional scaling. Mr. Lenth has been involved in numerous water quality monitoring projects where the statistical significance of long-term trends in water pollutant concentrations must be evaluated. He has also performed statistical evaluations of sediment and ground water data and has comprehensive knowledge of state protocols for statistically evaluating pollutant cleanup levels.

**Tracy Phelps, Geomorphologist**

Tracy Phelps has experience in geomorphology, land-use hydrology and three-dimensional fluid flow. Ms. Phelps specializes in hydraulic analyses including investigating hydraulic patterns using statistical and visual analyses of the spatial distribution of velocity and turbulence. Her experience includes conducting data acquisition for streams, including channel and cross-section surveys, Wolman pebble counts, pool sediment sampling, and macro-invertebrate sampling. She has extensive research experience within the academic setting as well as land-use consulting experience involving research related to the influence of wood debris in Eastern Washington streams. Ms. Phelps has a working knowledge of various ecosystems including inland mountain streams, coastal mountain streams and coastal bays.

**Michael C. Cawrse, Environmental Scientist**

Mr. Cawrse is an environmental scientist with over 5 years of experience in water quality, aquatic ecology, and wetland delineation. He is familiar with field and laboratory procedures for conducting water quality studies of streams and lakes. He has implemented several long term monitoring studies designed to assess land use impacts on water quality and riparian habitat. Mr. Cawrse has additional experience with data management and statistical analysis. Other skills include wetland delineation, aquatic and riparian plant identification, aquatic macroinvertebrate identification, and the analysis of water samples for various chemical and biological parameters. He also has experience with toxicity testing of fresh and salt water. Mr. Cawrse has also administered several lake management and marine resource citizen advisory committees.

**Dan Bennett, Staff Environmental Scientist**

Mr. Bennett is an environmental scientist with 10 years of experience in a wide variety of disciplines including soil science, aquatic ecology, water quality, erosion control, and forest and watershed management. He is familiar with a wide array of field and laboratory procedures for conducting monitoring and investigations of stream and soil quality, and assessing forests for habitat and timber

resources. He has implemented several water quality monitoring projects designed to assess the effectiveness of best management practices in controlling runoff from construction projects and from the use of soil amendments. He has conducted studies of biotic integrity of streams using indices of benthic-macroinvertebrate health. He is versed in surveying and map-making techniques, and has designed and implemented geographic information system (GIS) projects for King County Department of Natural Resources. Mr. Bennett has conducted field surveys of trees, vegetation, soils, and wildlife habitat as well as developed silvicultural prescriptions for the U.S. Forest Service, California Department of Forestry, Washington Department of Natural Resources, Oregon Parks and Recreation Department, and private landowners. Mr. Bennett has also carried out studies of soil quality where biosolids are used as fertilizer and as an amendment for revegetation of mine tailings.

#### Mark Ewbank, P.E., Principal Engineer

Mark Ewbank, Principal Engineer and Herrera's Director of Surface Water Engineering, has 17 years of experience in water quality, water pollution control, stormwater management, stream restoration, and related hydrologic and hydraulic analyses. Mr. Ewbank has conducted numerous assessments of hydrologic conditions in natural and developed environments and is thoroughly familiar with the development of stormwater treatment and detention system designs, as well as applications of source control best management practices for the protection of surface and ground water. He has conducted analyses of the effects of various pollutants on streams, lakes, wetlands, and estuaries, and analyzed alternative strategies for effectiveness in controlling surface water pollution. He has developed estimates of potential soil erosion from construction projects and prepared erosion and sediment control plans and designs. Mr. Ewbank has contributed to the design of several stream restoration projects, and managed Herrera's multi-disciplinary design teams on some of those projects. Mr. Ewbank has experience in developing water quality monitoring programs to assess existing conditions and in designing stormwater control facilities for residential, commercial, and industrial land uses. In addition, Mr. Ewbank has experience in developing supporting information for NPDES permit applications and compliance documents and all components of Stormwater Pollution Prevention Plans (SWPPP). Mr. Ewbank has also determined impacts of forest harvesting practices on runoff processes and related impacts on streams and instream habitat. Mr. Ewbank has the ability to direct multidisciplinary work efforts involving diverse tasks and budgets on a variety of environmental engineering projects.

#### 4.1.3 Method of Providing Services and Quality Assurance

Herrera uses a two-tiered product review system to ensure high quality and accuracy of all work. Under the first tier, the project manager will provide initial review, and has major responsibility for developing technical and design reports that are accurate and thorough (including performance of fieldwork). The principal-in-charge, will provide second-tier review and holds ultimate responsibility for the technical integrity of work performed by our staff. His final review and approval of all work products is the last step in a series of checks and balances that ensures refinement and review of work as it progresses. No draft documents will be issued to the State until Herrera's review process has occurred. These well-established review procedures enhance Herrera's ability to meet the State's needs throughout the duration of this contract.

Herrera has recent experience that demonstrates our capabilities and methods of providing statistical analysis services. A specific example that conveys this experience in water quality statistical analysis is Freeland Outfall Water Quality Improvement. The project is scheduled to be completed on time and within budget. This example project illustrates the methodology used by Herrera staff in gathering, modeling, and analyzing water quality data.

For this example project, Herrera developed and implemented a quality assurance project plan (QAPP) to characterize water quality in Freeland, WA for Island County Public Works. The QAPP was prepared in accordance with guidelines published by the Washington Department of Ecology. Monitoring for this project involved the collection base flow and storm flow samples at four locations within the Freeland drainage basin. Each monitoring station was carefully selected to evaluate pollutant loads from specific land use categories (e.g., urban, residential, and rural), and to evaluate the treatment effectiveness of a

stream/wetland system. Statistical analyses were then performed on the collected data in order to identify the primary sources of water quality impairment within the drainage basin. These analyses included a comparison of measured pollutant concentrations in each basin using a Friedman test, a nonparametric analogue to the blocked ANOVA. A nonparametric test was used because the data did not meet the required assumptions (e.g., normality and constant variance) required for a parametric test. Use of a blocked test increased the likelihood that spatial trends in the basin would be detected because noise or variance that was introduced from sampling over a range of storm sizes was removed. When statistical differences were detected using the Friedman test, a follow-up nonparametric multiple comparison test was conducted to determine which specific stations were significantly different from others. Based on the information obtained from these analyses, Herrera is making preliminary recommendations to the Island County Public Works for water quality treatment options to address observed problems.

A Quality Assurance Project Plan has been included with this submittal to demonstrate Herrera's quality assurance procedures for this project.

#### 4.1.4 Staff Qualifications

Herrera's key team members provided in Table 1 are available and qualified to provide statistical analysis services to the State of Montana. As indicated, each individual is fully trained and experienced in the environmental or engineering discipline they have provided technical writing documents for.

**Table 1. Herrera Team Members' Qualifications**

Team Members	Overall Years of Experience	Years on Similar Projects	Degrees	Professional Registrations and Relevant Training
Kathleen Adams	11	11	M.S. in Natural Resources, University of Wisconsin-Stevens Point, 1997 B.S. in Wildlife Management, University of New Hampshire, 1991	Implementing the National Environmental Policy Act on Federal Lands, Duke University, 2000
John Lenth	10	10	M.S. in Environmental Science, Huxley College, Western Washington University, 1995 B.A. in English, Seattle University, 1988	OSHA 40-Hour health and safety training for hazardous waste sites, 1997 WSDOT Certification as an Erosion and Spill Control Lead, 1997 6-Hour Confined Space Entry Training, 1998 WSDOT Biological Assessment Workshop; 1998
Tracy Phelps	2	1	M.S. Watershed Science, Colorado State University, 2003 B.A. Mathematics and Environmental Studies, Brevard College, 2000	
Michael Cawse	9	5	M.S. in Environmental Science (Aquatic Ecology), Western Washington University, 1998 B.S. in Microbiology (Molecular Biology), University of Washington, 1989	Wetland Science and Management Certificate, University of Washington, 2001
Dan Bennett	10	4	M.S. Soils Science, University of Washington, 1999 B.S. Forestry and Resource Management, University of California at Berkeley, 1992	6-Hour Confined Space Entry Training, 2001 40-Hour HAZWOP Training, 2002
Mark Ewbank, PE	17	17	M.S. in Civil/Environmental Engineering, University of Washington, 1992 B.S. in Civil Engineering, University of Illinois, 1985	Professional Engineer #29434: Washington, 1992

## Project Manager and Key Technical Staff

Kathleen Adams, head of Herrera's Missoula Montana office, will be the project manager and primary point of contact for work orders resulting from this contract. Ms. Adams is a senior natural resources scientist with over 11 years of experience in water quality, wetlands, plant ecology and wildlife. She has successfully managed several projects in Montana including the Flathead Agency Irrigation Project Programmatic Biological Assessment for the Bureau of Indian Affairs. Ms. Adams will provide contract administration. Mark Ewbank, P.E. will serve as principal-in-charge and provide quality assurance for this contract. Mr. Ewbank has over 17 years of experience with surface water management and water quality related studies.

John Lenth, a senior environmental scientist in Herrera's Seattle, Washington office, will be the lead technical coordinator for all statistical analysis work orders related to this contract. He has 10 years of experience conducting statistical analyses for water resource investigations. He is proficient with traditional parametric statistics and more specialized nonparametric techniques that are often required for analyzing water quality data. His background includes research in aquatic ecology that required use of multivariate ordination techniques to define water quality and habitat variables that explain trends observed in biological communities. Mr. Lenth has been involved in numerous water quality monitoring projects where the statistical significance of long-term trends in water pollutant concentrations must be evaluated. He has also conducted statistical analyses to meet the following study objectives: estimate pollutant loading rates for various land uses; identify pollutant sources for specific receiving waters; and evaluate the performance of stormwater treatment BMPs.

Supporting Mr. Lenth for statistical analysis work on this contract will be Tracy Phelps, Mike Cawrse, and Dan Bennett. Each has extensive experience in this area and has performed numerous water quality investigations requiring statistical analyses of the associated data. Ms. Phelps specializes in hydraulic analyses including investigating hydraulic patterns using statistical and visual analyses of the spatial distribution of velocity and turbulence. Mr. Cawrse is an environmental scientist with over 5 years of experience in water quality investigations. He has implemented several long term monitoring studies designed to assess statistically significant trends in water quality. Finally, Mr. Bennett is an environmental scientist with 10 years of experience in a variety of disciplines including water quality and watershed management. He is familiar with a wide array of data analysis procedures for assessing stream water quality.

Any agency using this contract to procure statistical analysis services can contact Kathleen Adams directly. Ms. Adams will also be the state agency's point of contact for any miscellaneous contractual issues. Once a request has been made for work in this area, Ms. Adams will work with the agency's project manager and John Lenth to identify the agency's primary needs and then develop a scope and budget for the project. Mr. Lenth will then be the primary technical coordinator and will perform all quality assurance reviews on the associated analyses.

## Section 4: Offeror Qualifications

### 4.0 State's Right to Investigate and Reject

Herrera understands and will comply.

### 4.1 Offeror Informational Requirements – All Service Categories

Herrera understands and will comply.

### 4.2 Offeror Qualification Requirements – Specific Service Categories

Herrera understands and will comply.

#### 4.1.1 References

Herrera Environmental Consultants has a history of successfully providing services to clients throughout the western United States. As an environmental science and engineering firm, Herrera combines the expertise of our scientists, engineers, and planners to provide an interdisciplinary approach to each project. This specialized approach provides our clients with a greater understanding

of each of the key components in every project. In addition, attention to our client's needs and a commitment to satisfying those needs efficiently have been the key to Herrera's success in managing its past and present projects. The following projects exemplify our experience providing training and educational services to a variety of clients, as well as provide a client contact for each project that will attest to our capabilities.

#### NEPA Training Workshop for Nez Perce Tribe, Lewiston, Idaho

*Client: Nez Perce Tribe*

*Contact: Ira Jones, Fisheries Director, (208) 843-7144*

*Performance Period: 2001*

*Contract Amount: \$32,300*

Herrera designed and presented a National Environmental Policy Act (NEPA) training workshop for the environmental staff of the Nez Perce Tribe in Lewiston, Idaho. The Herrera technical staff provided an overview of the NEPA process with detailed information on the regulatory requirements, a chapter-by-chapter analysis of assessment and documentation requirements and data needs, and the relationship of NEPA to other statutes including the Endangered Species Act, the Executive Order covering environmental justice, and the National Historic Preservation Act. Herrera worked with the Nez Perce Tribe to determine and meet the workshop objectives: to provide participants with additional skills to participate in the NEPA process for their own projects on federal lands as well as to comment on other federal agency projects.

#### Coffman Cove Road NEPA Environmental Assessment and Conceptual Wetland Mitigation Plan, Prince of Wales Island, Alaska

*Client: U.S. Department of Transportation, Federal Highway Administration (FHWA)*

*Contact: Steve Zaske, Environmental Protection Specialist, (360) 619-7723*

*Performance Period: 1999 – 2001*

*Contract Amount: \$46,170*

The Federal Highway Administration (FHWA), in coordination with the U.S. Forest Service and the Alaska Department of Transportation, proposes to upgrade the existing single-lane gravel road surface to a two-lane paved surface. Herrera facilitated the public scoping process and prepared a project checklist for the proposed improvement of Coffman Cove Road in the Tongass National Forest on the Prince of Wales Island, Alaska. The project checklist was part of an early coordination and data gathering process by the FHWA. The checklist provided an opportunity for the public and governmental agencies to become involved in the project development process. The checklist also assisted in determining the level of environmental documentation needed for the proposed project and assisted FHWA, Alaska DOT, Tongass National Forest, and other interested parties, in selecting a preferred alternative. Through the Checklist process it was determined that an environmental assessment (EA) would be prepared for compliance with NEPA. Herrera prepared an Environmental Assessment and Conceptual Wetland Mitigation Plan. Key issues addressed in the EA include water resources, socioeconomics, fish and wildlife, wetlands, subsistence use, cumulative effects, and compliance with the National Forest Land Management Plan. Extensive wetlands impacts are expected in the project area, due to the inherently wet climatic conditions on the island. Because of these conditions and the relatively pristine nature of the island, it was also expected that the identification of suitable mitigation opportunities would be challenging. In light of these challenges, Herrera conducted a brainstorming session with regulatory agencies, the Forest Service, and project representatives to determine priorities, goals, and needs. Preliminary opportunities identified included road obliteration at proposed realignments, conducting wetland determinations in the nearby city for use in planning, educational programs on the Section 404 process for city staff and local residents, forest road decommissioning, improvements to recreational access through wetlands systems, and long-term monitoring or restoration efforts.

In addition, Herrera prepared a permit guidebook for the City of Coffman Cove called "Working in Alaska's Water Resources." The guidebook is intended for residents to help their understanding of what permits are required and how to apply for them. The manual is also used by agencies in Southeast Alaska for training agency staff and professionals working in Alaska so they may provide



accurate and comprehensive permit requirement information. Herrera also handled hiring and training an employee for the City of Coffman Cove. This individual will educate residents on wetlands and environmental issues.

#### Training Workshops and Classes throughout Montana

Susan Wall-MacLane, a Herrera staff member presented in this statement of qualifications, provided classes to public and special groups in Montana. The following information provides details about the classes as well as references that can attest to the training abilities of Ms. MacLane.

##### Managing Soil to keep it Productive, Montana

*Client: Montana State University (MSU) Extension Service,*

*Contact: Rob Johnson, 406-375-6245, and*

*Client: Bitterroot Water Forum,*

*Contact: Roxa French, 406-375-2272*

*Performance Period: 2004*

This 40-person workshop was conducted for small-acreage landowners giving them tools to inventory property and develop goals for their acreages.

##### Working with Local Wetlands, Montana

*Client: Montana State University (MSU) Extension Service*

*Contact: Rob Johnson (406) 375-6245*

*Performance Period: 2003*

This information was taught to a 70-person class as an introduction to wetland delineation. The audience included the general public, natural resource agency staff, and realtors.

##### Composting (one segment of a 6 week class), Hamilton, Montana

*Client: Montana State University (MSU) Extension Service*

*Contact: Rob Johnson- county extension agent, 406-375-6245*

*Performance Period: 1998 - 2002*

Ms. Wall-MacLane Co-taught this class with Dr. Mal Westcott, soil scientist with the Ag Research Center, to a class of 40 master gardeners. This class was presented three separate times between 1998 and 2002.

##### Alternative Crops: Cultivation and Use, Corvallis, Montana

*Client: MSU Agricultural Experiment Station*

*Contact: Dr. Nancy Callan, professor of horticulture, (406) 961-3025*

*Performance Period: 1997 – 2001*

Ms. Wall-MacLane presented information about propagation, cultivation, harvest, and an introduction to essential oil production to a Master Gardeners Class of 50. Ms. Wall-MacLane taught the class both in 1997 and 2001.

#### Watershed and Forest Habitat Restoration Program, Wenatchee, WA

*Client: Wenatchee Valley College*

*Contact: Vicki Turner, PHONE*

*Performance Period: 2000 - 2001*

Herrera staff member, Mary Yoder-Williams launched a watershed restoration training program for the north campus of Wenatchee Valley College, comprising a yearlong sequence of lectures and field studies in a wide spectrum of watershed analysis and restoration techniques. Ms. Yoder-Williams developed and implemented course curriculum for watershed planning and management; watershed assessment methodologies; hydrology and water quality; erosion control and stabilization techniques; terrestrial and aquatic habitat restoration; forest ecology and silvicultural treatments; plant identification, terrestrial and aquatic invertebrate identification; wildlife and fisheries management; watershed ecology and biodiversity; natural resource map usage; and natural resource contracting. Ms. Yoder-Williams established partnerships, alliances and work cooperatives with natural resource experts, agencies, tribes, and non-profit organizations, to exchange expertise, align program objectives with community

needs, and construct practical field experience opportunities for program participants. The program was targeted at retraining displaced timber workers.

#### Preparation of Biological Assessments: An Advanced Training Manual, Olympia, Washington

*Client: Washington State Department of Transportation (WSDOT)*

*Contact: Marion Carey, 360.705.7404*

*Performance Period: 2000 – 2001*

*Contract Amount: \$30,155*

Herrera worked collaboratively with WSDOT fisheries and field biologists, state, and federal agencies in the development of an advanced training manual on ESA section (7) compliance, addressing the effective writing of biological assessments. Herrera developed course materials, course curriculum, course activities, a reference CD, and the text for an advanced training manual. WSDOT regional biologists and the federal services (USFWS and NMFS) reviewed the draft document and provided examples of effectively and ineffectively written sections of BAs, as well as guidance for some of the more complex topics. Materials produced in this effort are being used in advanced training courses and as reference materials for WSDOT biologists who prepare BA reports.

#### 4.1.2 Company Profile and Experience

Herrera Environmental Consultants, Inc. (Herrera) has been providing a diverse range of civil / environmental engineering, environmental science, and planning services to clients throughout the western United States, since 1980. Herrera's Montana branch office, and main office for Montana-related services, is located in Missoula. It is staffed by long-time Montana residents, who have gained professional experience in Montana and surrounding areas. In addition to our Montana staff, a high level of focused expertise in environmental science, engineering, permitting, planning and public involvement is available from Herrera's other offices.

Herrera offers expertise in most aspects of environmental science and engineering services, including environmental and regulatory compliance, permitting, restoration and mitigation, and construction management, with additional expertise in public policy development, environmental training, and technical publications, as well as project planning, design, and storm water and drainage design services.

Herrera has worked extensively with federal and state agencies, as well as local municipalities and tribes providing successful training for agency and municipal staff, as well as to the public, for over 8 years. Our public outreach expertise involves the development and coordination of training courses, training materials for diverse audiences, and public meetings. Our multidisciplinary staff has supplied instructors for a variety of training classes, workshops, and seminars on numerous topics such as fisheries, habitat, wetlands, Hazardous Waste Operations and Emergency Response (HAZWOPER), rivers, GIS, riparian and nearshore restoration, National Environmental Policy Act (NEPA)/Endangered Species Act (ESA), environmental regulatory compliance, and permitting.

Herrera has a pool of staff members available to provide training services. Their combined professional experience includes such diverse backgrounds as former Program Director for Environmental Training at the City of Seattle, environmental chemists and engineers, water quality experts, wetland scientists, and marine and freshwater biologists. Each trainer has extensive hands-on experience providing training and guidance to agency staff and the general public. Our staff members combine their diverse background in the natural sciences and engineering with their skills in presenting information to various groups to give practical guidance in applying environmental and engineering methods.

The following summaries describe the qualifications of our staff members who are qualified to provide training and education services to the State of Montana. Resumes detailing the qualifications of each individual follow these brief summaries.

**Kathleen Adams, Senior Natural Resource Scientist / Wildlife Biologist – Project Manager**

Ms. Adams, a senior natural resource scientist and head of Herrera's Missoula, Montana office, has experience in wildlife, wetland, and plant ecology. Her consulting expertise includes identifying and describing sensitive areas and upland vegetative communities, and evaluating wildlife and fisheries habitat and use for NEPA/SEPA compliance, Endangered Species Act compliance, and environmental permitting. Ms. Adams has conducted and prepared biological assessments for construction projects for state transportation agencies in Washington and Montana, and for the Federal Highway Administration. Ms. Adams has also facilitated agreement between regulatory and proponent agencies on wetland mitigation for high impact projects. She has a wide range of field experience including upland and wetland plant identification and sampling, rare plant surveys, songbird point counts, waterfowl surveys, small mammal and herpetological surveys, wetland delineations, and stream surveys. Ms. Adams provided training services on the Coffman Cove project.

**Susan Wall-MacLane, Staff Botanist – Technical Lead**

Susan Wall-MacLane is a botanist with over 15 years of experience working with native plants and sustainable agriculture in Montana. Her experience includes wetland delineations, riparian area classification, botanical resource surveys, and ecological monitoring in western Montana and Washington. While serving as project leader for the Teller Wildlife Refuge ecological restoration program, Ms. Wall-MacLane wrote a restoration plan, designed projects, and supervised volunteer crews. She has expertise in riparian ecology and hydrology, as well as experience identifying native and domestic grasses of western Montana. She analyzed fire scars and constructed fire histories for forests in the northern Rocky Mountains and has technical knowledge of fire ecology. In addition she is experienced in conducting training sessions on composting, plant identification, and plant adaptations for students, teachers and volunteers. She gave presentations on ecological restoration and cultivation of medicinal herbs to university students and the Montana Native Plant Society. She performed research on biological control of noxious weeds for Montana State University, and led a weed control demonstration project in her community. While working for the university she initiated research on alternative crops and cropping systems and performed assessments of root colonization by mycorrhizal fungi. She has extensive experience teaching extension courses, as described previously.

**Kristine M. Lee, Senior Environmental Scientist**

Kristine Lee is an environmental science director and has over 20 years of experience in environmental regulatory compliance, salmonid habitat analysis and restoration, environmental effects analysis, hydroelectric dam relicensing, conflict resolution, and project and program management. Ms. Lee is thoroughly familiar with the NEPA process and has experience in preparation and critical review of these documents, as well as conducting workshops on NEPA. She has prepared the fisheries, wildlife, hydrology, and water quality sections of numerous EISs and EAs on proposed timber sales, hatchery construction, road construction, hydroelectric development and licensing, geothermal power development, grazing allotments, and recreation projects. Her experience includes all aspects of the NEPA process, including public involvement strategies, baseline surveys, impact assessment, EIS/EA writing, mitigation preparation and monitoring. Ms. Lee also has extensive experience with Endangered Species Act assessment and consultation. Ms. Lee has managed large Federal agency programs that included fisheries, wildlife, and water resources, as well as large programs related to land and resource management planning and NEPA and ESA compliance. She has participated in teaching several national level workshops and has been a guest speaker for several university classes.

**Paula Fedirchuk, PE, Project Civil/Environmental Engineer**

Paula Fedirchuk, PE has 10 years of experience with civil and environmental engineering projects throughout the Pacific Northwest. Her interdisciplinary engineering experience with local, state, and federal regulatory compliance, hazardous materials and waste investigations, and CERCLA engineering support has provided the basis for excellence with training-based projects and in the classroom as a certified instructor for the OSHA 40-hour HAZWOPER and ancillary classes. Ms. Fedirchuk has over 6 years of experience conducting the OSHA required 40-hour Hazardous Materials/Waste Operations (HAZWOP), OSHA 8-hour refresher, and 8-hour awareness classes. Class size is up to 60 students and includes various teaching components such as hands-on

equipment instruction, written exercises, and Level A dress-up and half-day simulation exercises. In addition, training classes have been provided for the Central Washington University Bureau of Indian Affairs Water Resources Technician program. Ms. Fedirchuk has also developed the purpose and scope for curriculum and prepared teaching materials in support of inspector training for spill prevention, control, and countermeasures (SPCC) plan implementation for the Washington State Department of Transportation Environmental Affairs Office. Deliverables included the classroom training module, complete with training manual, PowerPoint presentation, SPCC inspection form, and a hands-on exercise for classroom or field-scale participation. Ms. Fedirchuk has also been an instructor for a geotechnical engineering laboratory course for over 50 students. The work was comprised of conducting weekly laboratory sessions and tutorials for a variety of geotechnical sampling and testing techniques, teaching environmental investigation methods, and in-situ field testing.

#### Mary Yoder Williams, Senior Ecologist / Environmental Planner

Ms. Yoder-Williams is an ecologist and environmental planner with more than 16 years of experience in biological assessment and environmental management. Ms. Yoder-Williams's strong interdisciplinary background in ecology and environmental planning makes her an expert at balancing environmental needs with business goals. She has served as advisor to interdisciplinary teams of utility, city, and regional environmental organizations; designed and implemented watershed and environmental education programs for both professionals and college students; forged partnerships, alliances and work cooperatives with natural resource agencies, tribes, and environmental organizations; and has provided project management and environmental expertise for hydroelectric utility operations and capital improvement projects. She has detailed knowledge and experience in botanical and wildlife surveys, vegetation mapping, terrestrial and aquatic habitat restoration methodologies, silvicultural treatments, watershed planning, sampling and taxonomic identification of terrestrial and aquatic invertebrates, and integrated pest management strategies. She has conducted environmental assessments, mitigation and remediation projects; prepared SEPA checklists and environmental permits; assisted in the development of EIS documents; developed and implemented policy recommendations and environmental procedures; and conducted comprehensive environmental compliance audits, emergency responses, and environmental cleanups.

#### Julie H.N. Hampden, Staff Environmental Scientist / Policy Analyst

Julie H. Hampden is an environmental scientist and policy analyst with 8 years experience in fisheries, wildlife, natural resource management and policy analysis. She has been involved with environmental education, environmental policy analysis, and biological field research, specializing in endangered species, ecosystems, and resource management issues. She has worked with agencies in preparing environmental procedures manuals to ensure compliance with existing regulations, has developed course materials and conferences on environmental regulations and technical issues for various state and local agencies, and has instructed several courses addressing the Endangered Species Act and its requirements. She coordinated a multi-agency effort to produce statewide guidelines for salmon habitat protection and restoration, coordinated a series of peer review workshops for these guideline documents involving representatives and agency experts throughout the western United States and Canada, and coordinated a multidisciplinary public lecture series entitled, "Puget Sound Basin and Salmon: Developing a Scientific Basis of Understanding" at the University of Washington. She designed a web-based survey for the Salmon Recovery Scorecard Data and Information workgroup and developed content for a web-based curriculum and research database sponsored by the Puget Sound Regional Integrated Synthesis Model. In addition, she has extensive field experience involving salmonid sampling, stream survey / riparian habitat research and classification, salmonid population distributions, spotted owl surveys, and carnivore foraging behavior.

#### 4.1.3 Method of Providing Services and Quality Assurance

Herrera uses a two-tiered product review system to ensure high quality and accuracy of all work. Under the first tier, the lead technical coordinator will provide initial review, and has major responsibility for developing technical and design reports that are accurate and thorough (including performance of fieldwork). The project manager and principal-in-charge will provide second-tier review and holds ultimate responsibility for the technical integrity of work performed by our staff. This final review and

approval of all work products is the last step in a series of checks and balances that ensures refinement and review of work as it progresses. No draft documents will be issued to the State until Herrera's review process has occurred. These well-established review procedures enhance Herrera's ability to meet the State's needs throughout the duration of this contract.

Herrera's approach to delivery of environmental education and communication services is tailored to each project. A small project, such as the interpretive sign developed by Susan Wall-MacLane for the City of Hamilton is handled through a series of several communications between Herrera staff and the client staff. After the purpose and audience for the project are established, Herrera staff develop several example layouts and formats. Having specific examples for the client to comment on helps focus the review effort. Based on client feedback, and input from other stakeholders when that is appropriate, the final product is developed. Accuracy of the technical information is ensured by a technical expert in the subject area.

More complex training and environmental education efforts require a more structured process, including identifying the learning objectives, target audience, and curriculum outline. Accuracy of the technical information is insured through Herrera technical expert review of outlines, presentations, and educational materials, as well as client review. In some cases, a "test audience" of several non-technical people may be used to ensure that the technical information has been appropriately communicated to the intended audience. In all cases, Herrera strives to be responsive to the client, while focusing on producing high quality products on time and under budget.

One example project, was NEPA training provided to Nez Perce tribal members by Herrera scientist Kris Lee. The audience for the NEPA training was tribal members and staff, some of whom had very little prior exposure to NEPA. The intent was to provide a solid NEPA background from which to write or review NEPA documents. Based on positive feedback from the first training session of several days, Herrera was asked to provide an additional session for more staff. Each trainee was provided a course specific notebook and training that included a NEPA overview, NEPA implementing regulations for CEQ and natural resource management agencies; staged decision making, the role of watershed analysis, public involvement, and other environmental statutes and considerations (such as Endangered Species Act, National Forest Management Act, Clean Water Act, Environmental Justice, National Historic Preservation Act, and Migratory Bird Treaty Act). The class also worked through a case study NEPA document where the class reviewed the purpose of each section of an EIS, read and critiqued a draft, and rewrote sections based on class discussion.

For this project, Herrera ensured the client's project needs were met by communicating closely with the client during the course design about the target audience and learning objectives.

#### 4.1.4 Staff Qualifications

Herrera's key team members provided in Table 1 are available and qualified to provide communication and education services to the State of Montana. As indicated, each individual is fully trained in the environmental or engineering discipline they have provided training and education services for.

**Table 1. Herrera Team Members' Qualifications**

Team Members	Overall Years of Experience	Years on Similar Projects	Degrees	Professional Registrations and Relevant Training
Kathleen Adams	11	11	M.S. in Natural Resources, University of Wisconsin-Stevens Point, 1997 B.S. in Wildlife Management, University of New Hampshire, 1991	Implementing the National Environmental Policy Act on Federal Lands, Duke University, 2000
Susan Wall-MacLane	16	16	B.S. in Botany, Duke University, 1981	Hydrology and Riparian Ecology; Gary Decker, Mary Manning; USFS 1992 Fire Ecology Symposium; UM 1992 Fire Behavior Course; Ron Wakimoto; UM 1993 Grass Identification Workshop; USFS 1993 Composting Course; Helen Atthowe; MSU 1996 Integrated Weed Management Class; Roger Sheely, Extension Weed Specialist; MSU 1996 Alternative Crops Workshop; Great Northern Botanicals 1997 Native Medicinal Plants Workshops; Montana Herb Gathering 1998, 1999
Kristine Lee	26	26	Ph.D. Forest Ecology, University of Montana, in progress M.S. in Fisheries Science, University of Alaska, Fairbanks 1985 B.S. in Biology, Washington State University, 1980	
Paula Fedirchuk, PE	10	6	M.S. in Civil Engineering, Texas A&M University, 1995 B.S. in Geological Engineering, Queen's University, 1993	Registered Professional Engineer #38775 in Washington, 2002 Certified Instructor for OSHA 40-hour and 8-hr HAZWOP classes in WA, AK, and ID 40-hour OSHA Health and Safety Training (29 CFR 1910, 120), 1996 40-hour WISHA Health and Safety Training for Level B Personal Protective Equipment, 1996 U.S. EPA Risk Management Programs Certification for Inspectors, 2001
Mary Yoder-Williams	17	17	M.S. in Ecology, University of Tennessee, Knoxville, Tennessee, 1986 B.F.A. in Graphics, Wittenberg University, Springfield, Ohio, 1971	
Julie Hampden	9	7	M.M.A. in Marine Affairs, University of Washington, 1999 B.A. Biological Anthropology- Human Biology, Cum Laude, Harvard University, 1994	



#### Project Manager and Key Technical Staff

Kathleen Adams, head of Herrera's Missoula Montana office, will be the project manager and primary point of contact for communication/educational work orders resulting from this contract. Ms. Adams is a natural resources scientist with experience in wildlife, wetland, and plant ecology; sensitive areas and upland vegetative communities; wildlife and fisheries habitat and use for NEPA compliance, and Endangered Species Act compliance and environmental permitting. Ms. Adams has conducted training on environmental and permitting topics for several projects. She has successfully managed several projects, as described in her resume.

Susan Wall-MacLane will be the lead technical coordinator for communication/educational work orders resulting from this contract. Her experience includes 15 years of experience working with native plants and sustainable agriculture in Montana. Her experience includes wetland delineations, riparian area classification, botanical resource surveys, and ecological monitoring in western Montana and Washington. Ms. Wall-MacLane is experienced in conducting training sessions on composting, plant identification, and plant adaptations for students, teachers and volunteers. While working at the Montana State University Western Agricultural Research Center, Ms. Wall-MacLane taught a number of extension courses to a variety of audiences.

Additional communication/educational services can be provided by Kris Lee and Paula Fedirchuk. Ms. Lee has over 20 years experience in environmental regulatory compliance. She has participated in teaching several national level workshops and has taught university level courses. In addition, she has conducted NEPA training courses for tribal and agency audiences. Ms. Fedirchuk's experience includes water resources, hazardous waste, construction oversight and regulatory compliance in Alaska, Idaho, and Washington. She is a certified trainer for the OSHA 40-hour HAZWOP and 8-hr HAZWOP refresher courses and is a certified EPA Risk Management Program inspector.

Any agency using this contract to procure communication/educational services can contact Kathleen Adams directly. Ms. Adams will work with the agency's project manager and Susan Wall-MacLane to identify the agency's primary needs for the project, develop a scope and budget, and develop curriculum and training materials. Based on the topics to be addressed, they will identify the most appropriate lead person to conduct the information and education program. Ms. Adams and Ms. Wall-MacLane have access to additional technical expertise on many environmental and regulatory areas from Herrera's other offices, if such expertise is necessary.

Ms. Adams will be the state agency's point of contact for contractual issues, and will perform quality assurance reviews on all education materials and curriculum. Ms. Wall-MacLane will be the primary technical coordinator and will develop the educational materials and curriculum.